
annual report

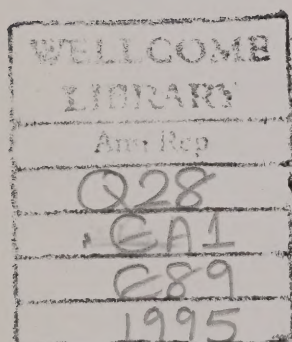


European Science Foundation

The European Science Foundation acts as a catalyst for the development of science by bringing together leading scientists and funding agencies to debate, plan and implement pan-European initiatives.

It is a multi-disciplinary association of 59 member research councils, academies and institutions devoted to basic scientific research in 21 countries. The ESF assists its Member Organisations in two main ways:

by bringing scientists together in its scientific programmes, networks and European research conferences, to work on topics of common concern; and through the joint study of issues of strategic importance in European science policy.



The Foundation maintains close relations with other scientific institutions within and outside Europe. By its activities, ESF adds value by cooperation and coordination across national frontiers and endeavours, offers expert scientific advice on strategic issues, and provides the European forum for fundamental science.

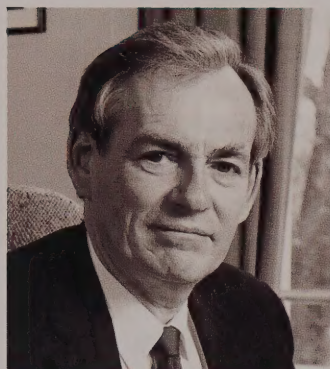
Contents

<i>President's statement</i>	1
<i>Secretary General's review</i>	4
<i>Scientific insights</i>	9
<i>Operational activities</i>	37



22501878073

President's statement



Sir Dai Rees

Crisis in science and government

INFORMATION SERVICE

- 2 AUG 1996

Wellcome Centre for Medical Science

Change is at work in the relationships between science and government across the whole of western Europe, raising new challenges for the scientific community and ESF. Common purpose between science and government is eroding fast, but without it neither science nor government can prosper individually. Governments know what they want from science but not how to extract it. Hence we see much pulling up of young research plants to inspect their roots. In Britain, the Research Councils have been moved between three government ministries in less than four years. Over this period, we have had four ministers of science and a fundamental change of the Research Council system. In France, the Research Councils have moved from their own Ministry to join Education, there have been three different ministers in the last two years, and serious questions are being asked about the internal workings of some Research Councils. Norway, Denmark and Iceland have also seen major changes. Even Germany has brought Research Councils, Universities and Technology into a single Ministry of the Future. If governments are rethinking the best location of science within government structures, the scientific community would do well to think out and speak out for a responsible position to reconcile the health of science with its productivity. How might we do this?

Lessons from history

As far as I am aware, the first moves to common purpose between science and government began in Germany. Before the First World War, a proposal was made by scientists for a partnership between private donors and the Prussian Government. The latter was to provide the land on which research institutes would be built as funds became available from private sources, and could then fund scientists to work in the institutes. This 'initiative' built upon Germany's great scientific and industrial strength. Even at that time, the scientific proposers were realistic enough to interest government by pointing out that "fundamental research is necessary to industrial advance". Thus was the mighty Max-Planck-Gesellschaft born, initially as the Kaiser Wilhelm Gesellschaft. Even in the earliest days, relationships between science and government were occasionally complicated by communication problems and even suspicion. For example, the Prussian finance minister had great difficulty in understanding how the particular science of pure physics, in a proposed institute to be headed by Albert Einstein, could offer immediate practical assistance to the state!

In Britain too, the first funding of science by the state was prompted by a sense of practical need - in this case by the approach of the First World War. Germany had patents and processes to produce dyestuffs, drugs and materials for the manufacture of high explosives, and quite naturally cut off supplies. The British Research Council system was started to deal with such problems and the poor state of public health before and during the war.

What of the European Union and its research programmes? The declared objectives are to enhance European competitiveness and convergence. Scientific research like other policy areas, however, is caught up in the tensions between the individual national viewpoints and between these and the central European institutions. Hence an outcome for research which is an aggregation of small objectives rather than the generation of a far seeing common vision. With all these tensions, how could it be otherwise?

In France we see a preoccupation with career structures in Research Councils and their interactions with Universities, and growing tendencies to follow Britain in the invention of new processes for the delivery of science to industry. In all countries in Europe - including Germany - we continually hear government exhortations to make research output more user friendly to SMEs, the so-called small and medium enterprises on which our future prosperity is supposed to depend. From the European Union it is now proclaimed that the Commission's research has been too far from the point of application, that task forces will be put together to address questions of technical development, and that Brussels should now take more responsibility for co-ordinating ("through co-operation") research policies of member states because the Treaty of Maastricht implies competence for this.

Europe's great need is for reconciliation between science and politics. War seems to have achieved this on several occasions in some countries (notably USA and UK), but economic recession works in the opposite direction. War unites nations, but recession divides - between haves and have-nots, between different political groups eager to blame each other for the state of affairs. Pressures are combining to push governments in Europe to demand returns from scientific research more quickly and more targeted to specific problems.

How might science respond?

Because governments don't know much about science and are too preoccupied to understand it, their ideas for getting more out of science in recession only address structures and organisation, and not the imaginative ideas needed from science. On the other hand, if we scientists wish government funding for our work, we must respect the needs of governments and taxpayers for appropriate returns. What have we to offer? Let me try to give some examples that occur to me.



Despite the ecological disaster of eastern Europe next door and the growing problem of urban pollution everywhere, it has been difficult to address the science of environment at the European level because of the emotion of Green politics, because different countries have different interests - for example some are exporters and others importers of pollution, and because within any one country different ministries (such as agriculture, energy, industry, health, transport and/or environment) might have different priorities for the short term. But why should this inhibit scientists from speaking out for and developing the research that society needs?

If the scientific enterprise is to finish the job of explaining life processes at the level of the laws of physics and chemistry and so lay foundations for new industries in the future, we need to know more physics and more chemistry as well as more biology. The current fashion to pursue the applications of physics and chemistry to engineering, materials and information technology is not helpful when it causes a shift of resources away from the key conceptual problems in the basic disciplines.

This is a dereliction of duty to future generations.

Where are the proposals for challenging programmes?

In a society in which all sense of wonder about the Universe is still not lost, why can't the scientific community inspire the public with a problem such as that the relative movements of stars do not square with the known laws of gravity operating on the known contents of our galaxies?

The influence of mental states on health and disease of the body on the one hand, and the influence of physical and social surroundings on states of mind must surely now be amenable to research. Where are the initiatives from the meeting points of modern research in genetics, physiology and psychology?

There are many other important scientific examples, and I would not claim that mine are necessarily the best. The scientific community needs to be more visible and audible in spelling out the science that needs to be done for society and why. Europe and the world need science to declare its visions! For the sake of humanity we must rise to this challenge. There is no better place to start the debate than within ESF.

Sir Dai Rees, *President, ESF*

Secretary General's review



Peter Fricker

**Professor
Peter Fricker,
the ESF's Secretary
General,
answers some
key questions
about how
the Foundation
is helping
to strengthen
Europe's basic
science capability.**

● How would you sum up the last year?

It was a productive and important year, not just in terms of the quality of the research and scientific advice that the ESF stimulated, but also with regard to its long-term development. In particular, the Foundation completed the implementation of the recommendations of its strategic reappraisal which will give the ESF greater focus and contribute to the advancement of basic research in Europe. This reappraisal of ESF's mission was an essential step forward. Over the last few years, our 59 Member Organisations and Europe's scientific community in general have had to operate in an increasingly uncertain economic and political climate, reflected in the downward pressure on national R&D budgets. Unless there is a pooling of resources where appropriate and a common voice of science, there is a very real danger that the long-term future of basic science in Europe could be undermined. There are also a growing number of issues that can only be tackled at a European level through the collaborative efforts of a range of countries and scientific disciplines.

The ESF's new approach will place it in a stronger position to act as the voice of European science and as a catalyst for debating, planning and implementing pan-European initiatives. It will also help the Foundation apply its scientific programmes, networks and conferences more effectively. Although these are early days, evidence suggests that this approach has given Member Organisations greater confidence in the Foundation's ability to protect and influence the future of basic research. This is our overriding goal as we firmly believe that basic science can make an invaluable contribution to Europe's future cultural, social and economic development.

● What are the main components of the ESF's new approach?

When the Foundation reviewed its strategic mission in close consultation with its Member Organisations we tried to identify the ESF's specific strengths and how these could be used to advance European science without duplicating the work of other scientific bodies. Five key strengths were defined that collectively set the Foundation apart: its ability to initiate and manage pan-European initiatives; its disciplinary breadth; the quality of its research; its independence and its flexibility. Based on these strengths, the conclusion was reached that the ESF should concentrate on five principal activities:



- Identifying scientific and strategic trends
- Forging research agendas
- Stimulating new lines of enquiry
- Enhancing research capacity
- Providing policy analysis and advice.

● **Does the ESF's new emphasis on developing research agendas mean that it is leaning more heavily towards 'top-down' research, rather than 'bottom-up'?**

No. The research and scientific priorities are collectively chosen by the ESF's Standing Committees, which represent the views and wishes of the scientific community as well as of national research funding agencies. They are driven by scientific and strategic considerations, not political or industrial demands. In many cases, the scientific proposals considered by the relevant Standing Committees emanate 'bottom-up' from scientists. In other cases, they may come from Member Organisations and reflect top-down national priorities. In both instances the Foundation will support the proposals provided they satisfy the main criteria of scientific excellence and European added value. The ESF's principal concern is to support high-quality basic science regardless of whether an idea comes from the 'top' or the 'bottom'.

● **How has the ESF reorganised itself to achieve its new goals?**

Following the strategic reappraisal, the Foundation has been restructured to make it more focused and to provide the scientific breadth needed to act as the voice of European science. For this reason, the ESF's Board has been strengthened and enlarged to achieve a disciplinary and geographic balance. It now meets regularly with the Chairmen of the ESF's Standing Committees to discuss scientific and strategic issues and exploit opportunities for synergy. To support this new strategic approach, a Strategy Unit has been created within the ESF office. Two new Standing Committees have also been formed out of the former European Science Research Councils (ESRC): the Standing Committee for Life and Environmental Sciences (LESC) and the Standing Committee for Physical and Engineering Sciences (PESC), which both include leading scientists in their respective fields, adding weight to their policy recommendations and ability to judge research proposals.

In addition, a new Membership Committee has been established by the Executive Council to examine applications for membership on a more systematic basis. Three new Members (the Hungarian Scientific Research Fund, the Slovenian Academy of Sciences and Arts and the Slovenian Science Foundation) joined the ESF this year and the intention in the future is to prudently expand the Foundation's membership to include appropriate institutions from Central and Eastern Europe. Like its Member Organisations, the ESF is also facing an increasing number of demands on its limited resources and needs to ensure that its financial resources are spent as cost-effectively as possible. To help it attain this goal, the Foundation has created a Finance Committee in line with the recommendations of the strategic reappraisal.

● **What has the ESF done to identify and address scientific and strategic trends?**

During 1995, the ESF embarked on a major exercise to identify central scientific themes and management issues which it believes the EU's next

Framework Programme should address. This process involved sending a questionnaire to Member Organisations as well as long and detailed deliberations by the Foundation's five Standing Committees. Research areas being considered range from information technology to molecular mechanisms in life and health, spanning all scientific disciplines, from physics to the humanities.

As always, the ESF's Standing Committees continued to play a vital role in forging new research agendas across all the disciplines, exploiting the potential of multidisciplinary research wherever possible. Their work on the impact of environmental degradation on health is just one example. In conjunction with the World Health Organisation and the European Commission, the Foundation is now bringing together medical scientists, biologists, social scientists and other experts to develop a research agenda that, for the first time on a pan-European scale, will address issues as diverse as reproductive toxicology and the risks to health from ambient and indoor pollutants. To stimulate further activity in this field, a research programme is being planned and will be followed by a white paper suggesting a broader RTD strategy.

The Foundation also launched a new programme to address one of the 'grand challenges' facing marine and polar science. Called the European Project for Ice Coring in Antarctica (EPICA), it will provide valuable information on climatic change over the last 500,000 years by extracting ice cores from up to four kilometres deep in the Antarctic ice sheet. Another new programme, Tackling Environmental Resource Management (TERM), will encourage European social scientists investigating environmental change to share their expertise and collaborate, enabling Europe to develop more comprehensive strategies for dealing with environmental problems. The Humanities Standing Committee has also initiated a new programme on The Individual and Society in the Mediterranean Muslim World, which will improve Europe's understanding of social integration, immigration and the co-existence of different religions.

● How has the ESF strengthened Europe's research capacity?

The ESF attaches a high priority to enhancing Europe's scientific capacity and this was reflected in several developments during the year.

In conjunction with the EC, for example, the Foundation set up a new structure to develop strategies that will help marine and polar science organisations collaborate to make more effective use of their research capacity and facilities. The European Boards for Marine and Polar Science (EMaPS) will encourage scientists to cooperate in pan-European research programmes and enable them to study long-term issues, such as global warming, which are beyond the financial reach of a single country.

In the physical sciences, an expert group has been established to analyse whether Europe needs a new neutron source to compensate for the decline in the number of small neutron sources that were built in the 1960s and are now being closed down. In early 1996 this question was examined in a workshop involving some 80 leading researchers. Another expert group has been established by the Standing Committee for the Social Sciences to carry out a feasibility study for a European social attitude survey. Both these initiatives demonstrate the ESF's potential to become a 'clearing house' for European research facilities, a role that the Foundation plans to develop.

The ESF is also very conscious of the need to imbue a spirit of collaboration amongst the next generation of researchers. One important way this has been achieved has been by inviting young scientists to participate in the ESF's European Research Conferences, which bring together leading scientists to discuss issues at the frontiers of science across all disciplines. Forty-five of these conferences were held in 1995 and 40 per cent of the participants were under the age of 35. The Foundation also awarded Fellowships within several of its scientific programmes, giving young scientists the opportunity to work with their European colleagues in specific research areas.

● How has the ESF contributed to scientific policies at a European level?

As indicated earlier, the Foundation has contributed through a number of strategic and scientific initiatives to the development of European science policy. Along these lines, links with European and national institutions have been intensified. In particular, the relationship with the EC has been strengthened. For example, our meeting in Strasbourg with Madame Cresson, European Commissioner for Research and Development, in September 1995, gave us the opportunity to raise awareness about the ESF's new science policy outlook as well as research that has a bearing on the EC's new Task Forces, including the ESF's Network on European Communication and Transport Activities Research. The Member Organisations and the Foundation's Standing Committees also devoted a considerable amount of time and effort in identifying the scientific priorities that they believe should be included in the next Framework Programme. Although it is difficult to predict what impact these recommendations will have on the EC's R&D agenda, we are confident that they will be taken into account. Indeed, in her statement to the Foundation's General Assembly in November 1995 Madame Cresson said: "The outcome (of the ESF's proposal) will no doubt constitute an important contribution to the general outlook regarding the future of the Union's research policy."

Equally importantly, the ESF has been stimulating debates about the accountability of scientists, the value of technology foresight and other policy issues through a series of workshops entitled 'New Perspectives for European Science'. Furthermore, in conjunction with the Executive Council, the Foundation's Associated Committee on European Space Science brought to the attention of government ministers and other policy makers specific policy issues regarding the future development and support for space sciences.

● What has the Foundation done to forge closer ties with other European and international scientific bodies?

Close links with Europe's leading scientific bodies are essential, not only to avoid unnecessary duplication, but also to share ideas and resources. Throughout the year, we continued to build stronger links with the European Science and Technology Assembly (ESTA), EuroHORCs, Academia Europaea, the Conference of European Rectors (CRE), All Learned Academies (ALLEA), and other bodies. One significant illustration of this is that the ESF President is now an ex-officio member of EuroHORCs' Steering Committee and, along with the Foundation's Secretary General, a member of its Assembly. The Chairman of EuroHORCs, in turn, has been invited to attend relevant ESF meetings. Equally importantly, close contact was

maintained with Member Organisations through a number of visits and meetings. This has helped us keep abreast of their concerns and obtain a more comprehensive overview of Europe's principal scientific issues and priorities. Beyond Europe, ties with the International Council of Scientific Unions (ICSU), the OECD and research funding organisations in North America were enhanced and plans drawn up for joint activities. In addition, the ESF's Asia Committee has continued to develop closer links between European and Asian academics and institutions. This is particularly important given the growing importance of Asia for Europe and the world at large.

● **What has the Foundation done to improve the scientific community's and opinion formers' knowledge and understanding of its work?**

The ESF strongly believes that the future of basic research doesn't only lie in carrying out outstanding work, but also in convincing opinion formers and other parties that this type of research is vital and worthy of support. To convey this message and present the ESF's activities in a clearer and more visible manner, the Foundation has established a new Communications Unit. As well as continuing with our *Communications* journal and other publications, such as research bulletins, the Unit has produced a new brochure outlining the Foundation's new strategic role. It has also established a fresh World Wide Web site on the Internet that explains the ESF's activities and will be updated as new initiatives are announced; this site has proved to be rather popular, generating twice the number of 'hits' or enquiries as the previous version. A more pro-active approach to media relations has also resulted in greater press coverage for the Foundation's work which will be enhanced by closer ties with the European Union of Science Journalists Associations which now has its seat at the ESF's headquarters in Strasbourg. The product of the most recent initiative, a 'new-look' annual report, is in your hands and, hopefully, gives a clear picture of the contribution that the ESF can make to the long-term future of fundamental science.

● **What are the ESF's plans for 1996?**

The Foundation will continue to build on its new strategic role, stimulating and supporting scientific programmes and networks that mirror its Member Organisations' research priorities and making sure that the voice of Europe's scientific community is heard by policy makers and opinion formers. The ESF's input into the next Framework Programme, which will be finalised shortly, will play an important part in this. In the same way that we encourage scientists to collaborate, we also look forward to closer relationships with our fellow scientific bodies. In the meantime, I would like to thank everyone at the ESF and, in particular, our Member Organisations, for their support during a challenging, not always easy, but altogether fruitful year.

Peter Fricker, Secretary General, ESF

Scientific insights

**This section provides an insight
into some of the work that the ESF supports.**

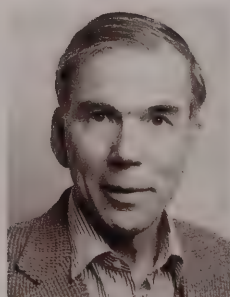
**Due to space constraints, it is necessarily
selective and only represents a fraction
of the Foundation's activities.**

**However, it should give members
of the scientific community, policy makers
and the general public a flavour
of the breadth of the ESF's activities and
their significance for Europe as a whole.**

Physical and sciences

PESC has been concentrating on three broad issues, all of which will help the long-term development of European basic and applied research in the natural and technical sciences. First, we have been considering new research programmes that will strengthen the links between physics, chemistry and mathematics and applied fields.

For example, planned transdisciplinary initiatives in applied mathematics should give rise to technical and industrial applications through the development of the algorithms needed to create new generations of software. Secondly, through our input into the next EU Framework Programme, we have placed considerable emphasis on how physics, chemistry and mathematics can provide the basic technological skills that industry needs to move forward. Both of these initiatives - the programmes and our contributions to the ESF's input into the next Framework Programme - are being worked out through discussions with our Member Organisations and Europe's scientific societies, enabling us to tap into the broadest possible spectrum of views and expertise. Thirdly, we have adopted a similar strategy with respect to the development of Europe's large-scale facilities, which PESC, in collaboration with the other ESF Standing Committees, has taken up as a major issue. We strongly support the ESF's role as a scientific clearing house for large research facilities in Europe.



Professor Jens-Erik Fenstad,
Chairman of the Standing Committee
for Physical and Engineering Sciences (PESC)

Tackling Europe's 'neutron drought'

Neutron scattering has become an important technique for studying the structure of all forms of condensed matter and *in situ* processes such as ion motion in membranes and batteries.

Materials scientists, condensed-matter physicists, engineers and structural biologists are just some of the people who depend on this technique for basic, applied and industrial research. However, unless steps are taken to address a forecasted shortage of neutron sources in the next 10 years, Europe's ability to continue to make important scientific advances in these fields could be undermined, as well as its position as the world leader in neutron scattering techniques.

Currently, Europe has the world's two most powerful neutron sources, the 58.3 MegaWatt reactor at the Institut Laue-Langevin (ILL) in Grenoble and the ISIS pulsed spallation source at the Rutherford Appleton Laboratory in the UK. But both of these are already oversubscribed, while only two of Europe's 19 other small-scale neutron facilities will be running at the end of the century, according to a 1993 report from the OECD's Megascience Forum.

engineering

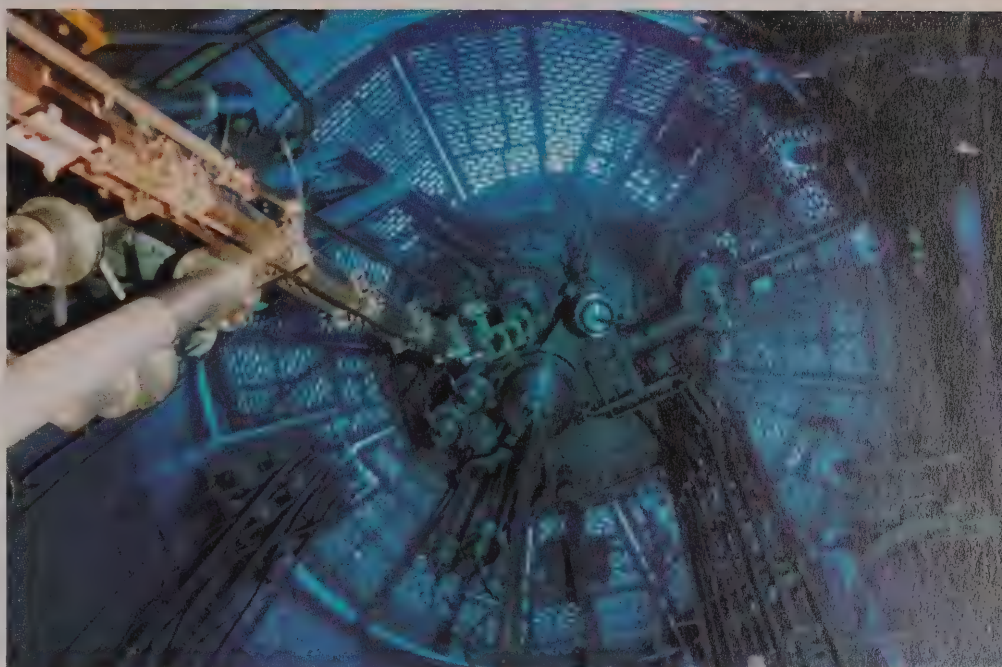
"Small neutron sources have a finite life and many of these in Europe are coming to the end of their time," says Professor Peter Day at the Royal Institution in London.

The problem is made even more acute by the fact that the predicted neutron drought will come at a time when scientists will be increasingly relying on the properties of neutrons for studying more complex materials and systems. Neutrons, for example, can be used to probe the time scale of $10^6 - 10^{12} \text{ sec}^{-1}$ which is a critical region in biological molecules and other complex systems. They can also penetrate deep into most materials, enabling scientists to analyse internal stresses and textures in engineering materials.

"The scientific community faces two main challenges," says Day. "In the short term, we need to optimise the use of existing facilities, such as ILL and ISIS. There is no technological reason why these facilities shouldn't run more cycles a year. It is a question of finding ways to enhance the amount of beam time available and widening the access to scientists from European countries that are not members of these facilities.

"The second more long-term issue is to investigate whether we will need new neutron sources and what sort of sources these should be. We cannot begin to contemplate building a new machine until the scientific community has made a watertight case for its need."

The ESF and its Standing Committee for the Physical and Engineering Sciences (PESC) have set up a task force to address these issues. In January 1996, an ESF exploratory workshop was held at Autrans, near Grenoble, on "The



Institut Laue-Langevin

Status and Future of Neutron Scattering', chaired by Professor Hubert Curien and Dr Gerard Lander, in collaboration with the European Neutron Scattering Association. To make more effective use of existing facilities, one possibility being considered is to try to secure funding in the next EC Framework Programme for scientists to travel to and use the facilities through DGXII's Training and Mobility of Researchers programme.

However, PESC's involvement in discussions about Europe's future neutron source requirements is only one part of a much wider engagement of the ESF in the debate about large-scale facilities that spans all the scientific disciplines, including the medical, life and environmental and social sciences, as well as the humanities. In line with several other international and European bodies, the ESF and PESC believe that Europe needs a multi-science,

Institut Laue-Langevin

Cherenkov luminescence at one of the world's most powerful neutron sources.

strategic clearing house for large facilities and has concluded that the ESF should take on this role in cooperation with its Member Organisations and other European bodies such as EuroHORCs and most notably the EC.

The ESF is already very active on the large-scale facilities front. As well as investigating the neutron source issue, the Foundation's Standing Committees are looking at several other proposals for medium-to large-scale facilities, from a European Laboratory for 100 Tesla science or a European Laboratory for electrons to an international stratospheric laboratory for astrophysics and a major pan-European survey of social and political attitudes (see page 34).

Radio astronomers win landmark battle

The value of European cooperation was demonstrated when the ESF's Committee on Radio Astronomy Frequencies (CRAF) joined forces with other bodies in the region and beyond to prevent an important scientific radio band being swallowed up by the telecommunications industry.

The initial problem stemmed from plans in the telecommunications industry to launch a new series of satellites that would operate in the same frequency band used by radio astronomers to record radio emissions from dying stars hidden by clouds of dust and gas. Although the satellites would enable mobile phone users to talk to each other from some of the remotest locations on the globe, from deepest Africa to the wilds of outer Mongolia, radio astronomers were concerned that the satellites' radio emissions, which would range from 1610 MHz to 1626.5 MHz, would drown out weaker signals received on the 1612 MHz frequency. This is the frequency used by scientists to study the distribution of hydroxyl ions thrown off by giant stars, enabling them to investigate issues as diverse as the formation of galaxies and more accurate ways of predicting earthquakes.

"It would be like someone shining a bright torch into the lens of a very sophisticated and expensive camera just as you're about to press the shutter," says Dr James Cohen of England's Jodrell Bank radio telescope and chairman of CRAF.

It would also affect a large number of observatories. Many of Europe's estimated 600 radio astronomers work in the 1600 MHz band.

To draw attention to this threat and others that are looming, CRAF produced a *Handbook on Radio Astronomy* that lays out the arguments for this branch of science and why its frequencies need to be protected. It also contains information on the international regulations

governing the use of radio frequencies. "It's not only designed to help people outside of the radio astronomy community understand the significance of our work, but also to bring radio astronomers themselves up to speed with the regulations and their rights."

Widely publicised in the international media, the book was distributed to a large number of policy makers, including members of the International Telecommunications Union (ITU), which is responsible for frequency band allocations. It was a strategy that clearly paid off. At the 1995 World Radio Conference in Geneva, the ITU bowed to the arguments in the book and the collective pressure of CRAF and other international bodies, including a powerful lobbying group from India, and agreed to uphold protection for the scientific status of the 1612 MHz band.

"If you have an organised viewpoint and speak with one voice, it polarises things and carries a lot more weight, as this case demonstrated," says Cohen.

However, the battle isn't over yet. Cohen says that radio astronomers now need to focus their attention on 'spurious emissions' from satellites that are polluting radio astronomers' frequency bands. These are generated by the physical powering of satellites operating in different but neighbouring frequency bands. "Regulation of this problem is quite lax and needs to be tightened up," he says. "We plan to tackle this issue at the next World Radio Conference in 1997."

Mineral studies create industrial advances

An analysis of how minerals develop naturally in the earth's crust has helped a group of ESF-funded scientists create novel ceramic materials that will have important industrial applications.

When minerals are formed over millions of years, either by crystallisation from molten rock or by solid-state metamorphic reactions at high pressures and temperatures, their atomistic structures go through various changes. By analysing time-dependent processes like these, researchers in the ESF's programme on Kinetic Processes in Minerals and Ceramics have been able to identify when these minerals are in non-equilibrium and under which conditions and to use this information to reproduce similar effects in industrial ceramics in order to make them more effective.

"If you want more efficient batteries or smaller condensers for computers, for example, you need the ceramic materials to be in a state of disequilibrium to give them the elasticity to allow atoms to move," says Professor Salje at the University of Cambridge, Chairman of the research programme. "If you leave the materials in the furnace too long, an inappropriate microstructure could stabilise."

Scientists are able to find out the points of disequilibrium by studying the materials *in situ* which involves observing how the material or its components behave in response to changes in pressure and temperature. "When minerals are formed by geological processes they keep a record of the transformations which we can study and reproduce in industrial

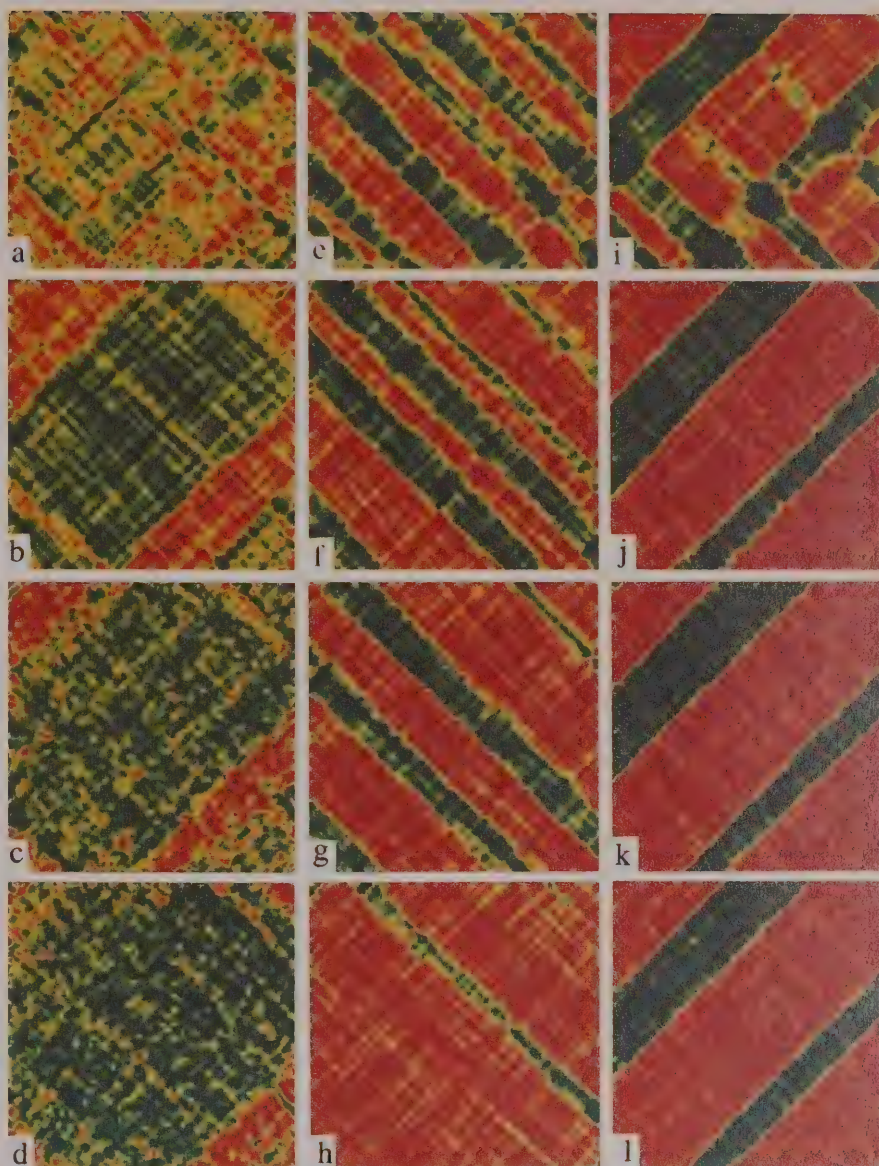
materials," says Salje.

Before the programme was launched, Europe lagged behind the US and Japan in this important field, largely because individual laboratories around Europe did not have the breadth of expertise or resources to push ahead on their own. By pooling skills and resources across the region, Europe has managed to overcome some of these problems. "We are now in the driving seat and have made some fantastic advances, enabling us to develop novel new materials that will have industrial applications," says Salje. Catalysis and ionic conductivity are just two of the areas where the team has taken the lead.

European collaboration has also enabled the various research laboratories to concentrate on their respective strengths. "There is increasing specialisation at laboratories around Europe which means that collectively we can carry out more sophisticated and ambitious experiments."

Creating high temperature superconductors

Computer-simulated microstructures which form during kinetic annealing of a high temperature superconductor.



Salje and Partinaka

Programme catalyses European chemists

An ESF programme has helped revitalise an important branch of European science, placing it in a stronger position to compete with the USA and sparking off a series of advances that could lead to more effective drugs to combat cancer, manic depression and other diseases, as well as improve our knowledge of plants' ability to produce oxygen from water by photosynthesis.

For nearly 30 years European scientists working in the field of biological inorganic chemistry have been falling behind their counterparts in the USA, largely due

to lack of resources and opportunities for collaboration. However the ESF's programme on The Chemistry of Metals in Biological Systems (METBIO) has

helped reverse this trend by stimulating the necessary collaboration to obtain the critical mass to forge ahead in certain key areas.

Biological inorganic chemistry is primarily concerned with the functions of trace elements, especially metals and their interactions with proteins. "Trace metals play a vital role in the metabolism of all living systems," says Professor David Garner at the University of Manchester, Chairman of the programme. "Over 60 per cent of enzymes are controlled by metals. There is a degree of toxicity associated with certain trace

elements, such as arsenic and platinum, but this property can be used in therapeutic treatments to knock out pathogens. What we've been doing is identifying the elements, the molecules to which they are bound and how they direct biological functions."

Established in 1991 and now having secured a two-year extension, the programme has made considerable progress, principally by bringing together senior and young researchers to tackle particular problems. Some of the scientists, for instance, have been investigating the possibilities of using certain trace metal compounds to combat cancers in particular organs. "A few of the new compounds prepared are undergoing trials," says Garner. Research has also led to the creation of new and benevolent cis-platin treatments for testicular and ovarian cancers.

The programme has also been analysing the function and inter-relations of the metalloenzymes of the nitrogen cycle, including how cells take nitrogen gas and convert it into ammonia. "All of the important transformations occur on metal centres. For nitrogenase, we have been looking at the framework of the catalytic site, how the nitrogen molecule comes in, binds to the protein and how it is broken down. The programme has been greatly stimulated by the academic

challenge and the strategic importance of these investigations and we now have a much fuller understanding of proteins as machines, very delicate ones admittedly, but machines nonetheless." Links with US groups operating in this field have played an important part in this achievement.

In addition, European scientists, including a Nobel-prize winning team are investigating how electrons 'hop' through biological tissue, especially during photosynthesis.

However, Garner is quick to point out that the programme's activities are only one part of a much broader international research effort. "It's wrong to attribute achievements to a single group of scientists as so many people are working in this field and making very important contributions. Where the programme has undoubtedly succeeded is in stimulating the collaboration that makes these advances possible. In particular, we've cross-linked groups throughout Europe across a range of disciplines, from chemistry, physics and biology to genetics and medicine."

European collaboration has been encouraged through a variety of mechanisms. An annual EURO-BIC (Biological Inorganic Chemistry) conference has been set up to build

on the achievements of its international equivalent, as well as a biennial EURESCO-style conference in Portugal to stimulate 'more free-ranging discussions.' Single-theme workshops have also been sponsored involving up to 50 scientists, half of them under the age of 30. Establishing links to facilitate funding through Brussels is an important feature of these.

To foster a new generation of scientists in this field, there have also been two-week training courses in Belgium every year for young scientists, typically 22- to 26-years old. "It's exhilarating to see the enthusiasm and commitment of these people, and the future of the field will be secure in their hands," says Garner.

Equally importantly, the programme has established a newsletter linking together 500 scientists across Europe and beyond and set up the Society of Biological Inorganic Chemistry (SBIC) with its own journal, the *Journal of Biological Inorganic Chemistry (JBIC)*. The Society now has 350 members from 34 countries. "We get one new member a day and are aiming at a total of 1,000 members." The two-year extension of the METBIO programme will help researchers in this important field consolidate these achievements and stimulate new activities.

Life and environmental sciences


In its first year, LESC has evaluated the scientific merits of a number of research proposals

submitted to the Foundation and we were pleased that many of our Member Organisations supported our decision to launch four new scientific programmes.

At the same time, we have listened carefully to suggestions for future activities coming from the scientific community. We have encouraged some of these scientists to develop their ideas further and we'd hope to see their proposals bear fruit in the coming years.

As part of our input into the ESF's suggestions for inclusion in the EC's future Framework Programme, we have adopted, after lengthy discussion, a set of research priorities from which we will select our own scientific programmes and other cooperative initiatives. The challenge in the future is to carry out basic research that will have spin-offs for Europe's population and provide the building blocks for future technological development.

The big issues we need to address are the impact of humans on the environment and how new knowledge can be used to allow society to progress at the same time as safeguarding life and the environment.


Professor Werner Rathmayer,
*Chairman of the Standing Committee for Life and
Environmental Sciences (LESC)*



Glaciers' sediments hold key to climatic change

An analysis of the sediments left by glaciers on land and in the sea has provided surprising new insights into climatic change over the last 5 million years which will help scientists predict future climatic developments.

Terrestrial and marine geologists in the ESF's research programme on the Polar North Atlantic Margins (PONAM) have been correlating data from two different sources to build up a detailed picture of the palaeoenvironment in the European Arctic, notably Greenland, Svalbard and their surrounding continental shelves. One source of data came from deep-sea deposits of sediment left by glaciers as they advanced and retreated. To obtain this information, the researchers drilled into the ocean floor and used other techniques such as sonar scanning. However, as the sedimentation rates in deep oceans are fairly low, they also collected data from land where there are higher, but more fragmented, sedimentation rates. Using different dating techniques, the scientists were able to combine these two types of data and correlate them to develop the most in-depth picture ever of how this region's climate has varied over the last 5 million years.

In particular, the findings shed new light on the differences in the frequency and magnitude between high- and middle-latitude glaciations, giving us a clearer understanding of the North-South variations in the Earth's climatic change. In Svalbard and east Greenland, for instance, glaciers advanced and retreated three times over the last 100,000 years (roughly one advance and retreat every 41,000 years), while the glaciers in Fennoscandia did this five times over the same period (about once every 21,000 years).

More significantly, PONAM found evidence of repeated intrusions of warm Atlantic water into the



Ice power

Glaciation has carved a surprisingly large amount of material from the European Arctic.

Norwegian-Greenland sea during glacial periods. This influx would have enhanced precipitation and the growth of the glaciers, indicating that the North Atlantic sea currents play a more significant role in controlling the climate of Northern Europe than previously thought.

The researchers, who were drawn from seven European countries, also discovered that glaciation has carved a surprisingly large amount of material from the European Arctic, averaging 1mm a year in the Svalbard-Barents Sea region over the last 2.5 million years. Put a little more graphically, the glaciers have

removed between five and 10 times as much material per square kilometre as the massive Mississippi and Amazon rivers and over a shorter period of time.

The relative brevity of the glacial coverage also suggests small glaciers play an important part in this process.

Spying holes in the ozone layer

A former Russian spy plane has been enlisted by a consortium of European scientists for a unique project that will help them to forecast the appearance of holes in the ozone layer above Europe.

The scientists will be using a Russian-built M-55 to track and measure polar stratospheric clouds (PSCs) above the Siberian Arctic, the Ural mountains and the Antarctic as part of a 10 million ECU Airborne Polar Experiment coordinated by the ESF.

Typically found between 15 and 25 kilometres above the polar regions, PSCs are known to act as catalysts for ozone depletion by converting inorganic chlorine-based compounds such as Freon, which is used in refrigerator gases and other applications, into active chlorine. This reacts with the ozone and initiates a chain reaction that produces more destructive chlorine. However, the precise nature of the chemical reactions that take place on the surfaces of the fine ice particles that make up the PSCs is not known and the Airborne Polar Experiment will be studying these. By combining measurements of these with mathematical models of possible physical and chemical changes occurring in the PSCs, the research team hopes to develop methods for forecasting the development of ozone holes and their positioning.

In its first phase, the programme will also analyse aerosol particles and chemical compounds in the air above the European Arctic, the first time such a detailed assessment of these has been made.

High-flying planes have been used before in the battle against ozone depletion. In fact, the first ozone hole was spotted by an American U2 plane. The main advantage of the



M-55 Geophysika

Holder of the world altitude record at 21.35 kilometres.

Russian M-55 is that it can fly higher than its American equivalents and carry more analytical instruments.

On board the plane, which can fly for up to six hours at altitudes of 21 kilometres and in temperatures as low as -80°C , there will be aerosol and chemical instrumentation. The aerosol instrumentation can observe particles as small as 0.4 microns, enabling scientists to identify the precise composition of PSCs. The chemical instruments will be used to study the chemical make-up of the clouds and the chemical evolution of air passing through them. The first flight is scheduled for early 1997.

"To get such a complex stratospheric campaign off the ground has taken the combined efforts of over 20 scientific institutions in eight countries," says Dr Leopoldo Stefanutti of the Italian National Research Council. "But the programme offers a real hope that we can add dramatically to our understanding of the processes behind ozone depletion. Unless we understand these processes fully, governments cannot draw up the right environmental policies."

The programme is currently supported by the Italian National Programme for Antarctic Research, the European Commission, the Italian Space Agency and Russian Research Agencies, while countries involved in the project include Italy, Germany, Finland, Norway, Russia, Sweden, Switzerland and Britain.

Boost for systematic biology

Every year species of organisms are wiped out by human intervention and other forces, but it's not just the diversity of the world's biological organisms that is under threat. The people who classify these organisms - systematic biologists - are also struggling to keep their heads above water.

Currently, half of the world's collections of organisms are held in Europe, but, as Nicola Donlon at Britain's Natural History Museum explains, some of these are suffering financial cutbacks that could undermine their long-term future, especially those held at museums.

"Systematic biology isn't considered a glamorous part of science and is one of the first areas to lose funding when money is tight," she says. "But, without our work, other scientists wouldn't be certain of the identities of the organisms they are working on, making it very difficult to compare research findings."

Systematic biologists are also needed to meet the goals of the 1992 Convention on Biodiversity, which include monitoring and conserving the world's biodiversity.

To put systematic biology on a stronger footing and raise its profile within the scientific community, the ESF has launched a Systematic Biology network. Its activities will include stimulating collaboration across Europe through a series of workshops; developing networks of specialists; and collating and disseminating information on systematic expertise and collections resources in Europe.



'Grand challenges' within sight

Europe's scientists moved a step closer to realising plans for a series of ambitious 10-year environmental research programmes when the ESF agreed to set up new European Boards for Marine and Polar Science (EMaPS) at the end of 1995.

As well as giving marine and polar scientists in Europe a collective voice, the two new Boards have been established to develop strategies that will help these scientists make more effective use of their research capacity and collaborate on long-term issues, such as global warming, which are beyond the financial reach of individual nations. Typically, issues like these demand budgets in excess of 50 million ECUs and 10-year time frames. Until recently, marine and polar research programmes have tended to be national efforts lasting one to three years and involving little pan-European collaboration. Lack of cooperation has also led to underutilisation of Europe's fleet of large research ships.

Although the European Boards for Marine and Polar Science have not finalised their respective research priorities, the four Grand Challenges that have been identified by the joint ESF/EC European Committee on Ocean and Polar Sciences (ECOPS) are likely to be high on the list. These include mapping the Arctic Ocean; operational forecasting of the ocean and coastal seas; studying the variability of the deep-sea floor; and ice coring in Antarctica to understand climatic change more fully. Work on ice coring in the Antarctica has already begun through the EPICA programme (see page 19).

Boost for marine and polar science

The creation of EMaPS, in collaboration with the EC, has launched a new era for marine and polar science in Europe.

Songbird network takes off

Over 40 scientific institutions in Europe and West Africa, from Norway to Senegal, have joined forces in a unique project that will shed new light on the migration strategies of nearly 200 species of Western Palearctic-African songbirds.

Although the migratory routes of these types of birds have been fairly well documented through previous ringing exercises, little is known about where they stop off on their way from Europe to West Africa, how long they rest and the ecology of the areas they use to fatten themselves up for the next leg of the journey.

The ESF's European-African Songbird network will provide the answers to these and other questions by ringing and collecting data on the birds as they migrate south, using a standardised ring system. Nearly 300 scientists and amateur ringers at 41 sites across Europe and West Africa are catching, ringing, calibrating and then releasing the birds. Body weight and wing lengths are just two of the characteristics being measured. Particular attention will be paid to the age and sex of the birds. So far, 160,000 birds have been ringed.

Space science funding constrained

Written contributions from the ESF's Associated Committee on Space Science (ESSC) helped persuade government ministers in Europe to maintain current levels of funding for space science until the year 2000, but recommendations that funding should be kept in line with inflation were not accepted. One paper dealt with the scientific use of the International Space Station Alpha, while the other covered all aspects of space science, Earth observation and microgravity and included recommendations on space science data policy. A similar paper on small satellites was published in December. Outside the ESF's financial year, recommendations on space science, earth observation and microgravity were prepared for the March 1996 meeting of the ESA's Council.

Queen of the Eurasian north

As relationships between Russia and the West have thawed, a growing array of European scientists have been given access to the Eurasian Arctic to study palaeoclimatic change in this northern region of Russia. Unfortunately, many of these projects are operating in isolation and there is little information flowing between the institutions involved in them. To overcome these problems, the Life and Environmental Sciences Standing Committee has established a scientific programme on the Quaternary Environment of the Eurasian North (QUEEN) which will cement links between scientists working in this field. The programme will concentrate on a range of issues, from the time-dependent development of permafrost to reconstructing ice-sheet growth and decay in this region over the last 250,000 years.

Epic endeavour

A major research programme has been launched that will help scientists answer a number of key questions about environmental change, including whether climatic variations are always triggered by activities in the Northern hemisphere and, perhaps more crucially, whether the stability of the climate over the last 10,000 years is an environmental anomaly.

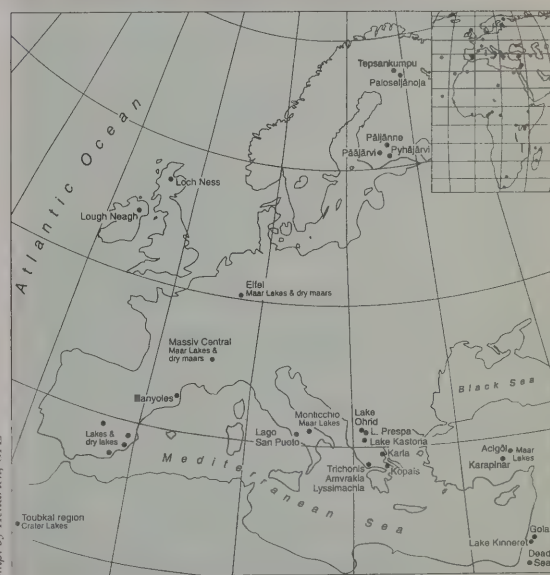
The European Project for Ice Coring in Antarctica will attempt to resolve these and other questions by drilling four kilometers deep into the ice sheets in Antarctica and recovering ice core samples. By analysing the tiny air bubbles that have been trapped in the ice as it has built up over the last 500,000 years, scientists will be able to measure the levels of greenhouse gases in ancient environments. Data on trace impurities in the samples will also help them establish the characteristics of these climates, including temperatures and precipitation rates.

Dome Concordia has been chosen as a drill site because its low annual snowfall and thick ice will provide

very long records. While within Dronning Maud Land sites with high annual snow accumulation will provide high resolution records. The programme will complement the achievements of the ESF's Greenland Ice Core Project (GRIP). Amongst several important findings GRIP revealed that climatic oscillations are closely associated with changes in continental aerosols and methane and that there were large and abrupt oscillations during the last Ice Age. One issue EPICA will address is whether these sudden upheavals were peculiar to Greenland or global phenomena.

Other new programmes

The ESF's contribution to research into climatic change moved up a gear with the launch of two further scientific programmes: Transport Processes in the Atmosphere and the Oceans (TAO) and the European Lake Drilling Project (ELDP). TAO will look at several transport processes from a theoretical and numerical perspective, including the influence of coherent structures on turbulent transport and a dynamic systems approach to advection and transport. The Lake Drilling project will provide high resolution sedimentary data from lakes, including dry lakes, facilitating annual and seasonal analyses of middle latitude palaeoclimates.



Drilling for answers

Proposed coring sites of the European Lake Drilling Project (ELDP).

Medical sciences

The EMRC (European Medical Research Councils) agrees with national and European governmental research organisations that high quality science is essential to improve our knowledge about nature and mankind and, ultimately, the social and economic well-being of society. However, unlike these organisations, we do not believe these activities should be approached from a strictly utilitarian perspective. We believe that the best strategy is to develop basic science and exploit its results in close collaboration with industrial, administrative and service sectors. The EMRC's involvement with the WHO and EU in the ESF's Environment and Health initiative is one example of how this can be done. Our clinical collaboration programme is another instance. In the wake of the ESF's strategic reappraisal, the EMRC is in a much stronger position to further this aim and to explore new research avenues at a higher speed than other European channels using a range of tools, from conferences and workshops to networks and *à la carte* research programmes. This has been demonstrated by a recent call for proposals for workshops covering subjects such as the human genome, social variations in health and ageing. Although the EMRC does not have the funds to sustain long-term research in areas like these on its own, it can act as a catalyst and, through its Member Organisations, whose collective research resources are far greater than the EC, create the necessary momentum to move basic science forward.

Professor Philippe Lazar,
Chairman of the European Medical
Research Councils (EMRC)



Impact of the environment on health becomes major priority

Over the last decade there has been mounting public concern about the potential impact of global warming and other environmental problems on the Earth's ecosystems, stirring up images of countries' coastlines being swallowed up by rising sea levels. However, there is growing evidence that environmental degradation is at the root of a more immediate problem - the state of our health.

Cancer, bronchitis and cardiovascular diseases are just some of the illnesses that have been linked to pollution, especially outdoor air pollutants. Waterborne diseases such as Hepatitis A and diarrhoea are also high on the list and becoming increasingly widespread due to contaminated water supplies. According to the World Health Organisation, 100 million people in Europe do not have access to reliable supplies of drinking water and an even greater number do not have sanitation services. There is even the possibility that the decline in male fertility could be related to

oestrogen-like chemicals being released into the environment.

However, the environmental threats aren't just confined to pollutants. Many accidents are also caused by environmental factors, for example lack of proper safety mechanisms at industrial sites. In Europe alone, 200,000 people a year are killed by accidents at home, on the road and at work.

"The impact of the environment on health is becoming a major concern across all of Europe, especially Eastern Europe where environmental regulations tend to be less rigorous," says Professor J Huttunen, Director of the National Public Health Institute in Helsinki, Finland.

Huttunen is the Chairman of a provisional steering group that is investigating the possibility of setting up an ESF research programme on Environment and Health as part of a wider environment and health initiative jointly run by the ESF, the European Commission and the World Health Organisation.

"Although the EMRC identified environment and health as a major research priority in 1994, the WHO and EU were also moving in this direction and it made sense to work together," he says. "Indeed at the second conference of Ministers of the Environment and Health in Helsinki in June 1994 there was a declaration, based on the WHO's report, *Concern for Europe's Tomorrow*, that the EU, ESF and WHO should embark on a joint programme of research."

One of the aims of the ESF's prospective programme on Environment and Health is to identify what the research priorities should be and provide appropriate advice to the European Union, as well as to the 1999 Intergovernmental Conference on Environment and Health. Although the programme is still under consideration, the Steering Group - which includes leading scientists from all disciplines, policy makers,

WHO representatives and the Chairmen and representatives from three of the ESF's Standing Committees (EMRC, LESC, SCSS) - has pinpointed two initial themes for investigation: airborne particulates and morbidity; and environmental influences and cognitive functions. Other themes under consideration include pollution of the aquatic environment in relation to health; and children and accidents. Additional possibilities include urban health statistics and urban exposures; and male reproduction and environmental influences.

In line with the ESF's policy to stimulate international collaboration across all scientific disciplines, the programme intends to draw on the multidisciplinary skills and resources of scientists across Europe. "International collaboration is essential," says Huttunen. "Many of the environmental problems we hope to investigate, such as air pollution and drinking water, don't respect national boundaries. We also need a broad spectrum of scientific expertise not only to understand the medical implications of these problems but also to grasp the environmental and socio-economic forces that determine their spread."

In terms of the overall environment and health initiative, the ESF's main role is to concentrate on basic science and develop research priorities and provide strategic advice. The WHO, in turn, will focus on the implementation of these findings, while the EU is concerned with the 'needs pull'.

"To avoid any duplication, we will have to maintain close links with the EU and WHO," says Huttunen. "The entire health and environment initiative is an exciting and challenging development and I hope more governments and Member countries will become involved."

Europe's toxicological skills strengthened

Regulators' abilities to judge the risks to human health and ecological systems from releasing chemicals and other industrial products into the environment have been enhanced by an ESF programme of Fellowships.

Now in its fifth year, the Foundation's Toxicology Fellowship Programme has so far enabled 205 young scientists to learn new techniques at research laboratories across Europe and, in particular, to study the mechanisms that determine how potentially noxious substances affect human health, wildlife and the wider environment.

"Toxicology is now in a rapid state of development due to advances in molecular biology," says Dr Luciano Vitozzi at the Istituto Superiore di Sanità in Rome, Chairman of the Steering Committee for the ESF programme of Fellowships in Toxicology and Environmental Toxicology. "We realised that these advances needed to be applied more widely to toxicological investigations. But this couldn't be done through the normal university training channels as the relevant knowledge is spread across Europe. By awarding Fellowships to researchers to study in laboratories outside their home country, we can integrate this knowledge systematically and train toxicologists in new techniques."

However, as Vitozzi points out, the Fellowships aren't just designed to educate researchers in new methodologies. They are also intended to encourage toxicologists to look at their subject from a fresh perspective. "In the same way that the advent of the microscope changed the way that biologists and other scientists approached their respective disciplines, advances in microscopic biology are

altering how we approach toxicology," he says. "We need to develop our thinking and research in line with these changes." The social benefits of doing this could be significant. "By integrating advances in molecular biology into toxicological research we can identify the biomarkers that indicate individuals' susceptibility to different risks, such as the risks of developing a particular tumour or those derived from occupational exposures," says Vittozzi.

"Insights like these will give regulators a fuller and more scientifically rigorous basis for evaluating the safety of chemicals and avoid unnecessary regulatory constraints, which will help economic development. Not all uncertainties will go but we can look at the risks in a more transparent way."

Dr Thomas Schulz is one of the researchers who has benefited from the Fellowship scheme. Originally based at the Freie Universität Berlin, he was awarded a two-year Fellowship to work in a London medical school, where he is comparing cytochrome P450 monooxygenase expression and activity between marmoset monkeys and man. "It's been a valuable opportunity to learn lots of new techniques, especially by linking up with other disciplines, such as molecular biology," he says. When he was testing an antibody for a particular enzyme, for instance, he initially found it would not bind to the marmoset, but he soon found a way round this difficulty. "I talked to the biologists and found there were techniques to overcome this. It involved a lot of learning but it paid off as I was able to design a new and specific antibody."

Network will help regulators of genetically-engineered organisms

When a virologist in Oxford introduced the gene for scorpion toxin into a plant to test whether this would kill off pests - effectively a genetically-engineered pesticide - there was widespread concern amongst the local community. Would the gene be expressed in the pollen and be carried off by insects such as bees, wiping out local hives. What if it found its way into honey and ultimately into the nation's dining rooms? Would it disturb the balance of local woodland ecosystems?

No one knows the answers to these and many other questions with any certainty, but the case illustrates how limited our knowledge of genetic exchange and its consequences is. However, an ESF scientific network focusing on genetic exchange from bacteria will help to provide some answers and give regulators a clearer picture of the risks associated with releasing particular types of genetically-engineered organisms into the environment.

The Foundation's network on The Molecular Biology and Ecology of Plasmid-mediated Gene Spread brings together the two key scientific disciplines needed to address this issue: molecular biologists and microbial ecologists. Both groups of scientists have been studying bacterial plasmids which are major factors in genetic exchange. The molecular biologists have been dissecting plasmids to ascertain to how they replicate, how



Genetic exchange

Mating between a gut bacterium, *Escherichia coli*, and a distant relative from soil, *Streptomyces lividans*. The short rods of *E. coli* attach and fuse with the filaments.

stable newly-created plasmids are and how they might enter and be expressed in new organisms. The microbial biologists have been investigating the survival and spread of plasmids in natural and model microcosms.

"There is enormous potential to design experiments that dissect out the most important elements for the persistence and spread of these plasmids in the environment, but this hasn't been done until now because of the lack of collaboration between those doing ecological tests and those with detailed knowledge of the plasmids," says Professor Christopher Thomas at the UK's University of Birmingham, head of the network.

"By doing this sort of work we can not only deepen our understanding of genetic exchange between specific organisms, but also the factors that influence its speed and prevalence. Insights like these will help regulators, particularly at a European level where genetically-engineered organisms are a major concern, determine the real risks and the amount of control needed for particular organisms."

Although the network won't be able to carry out field trials on genetically-engineered organisms, as the regulators don't allow these sorts of experiments, Thomas has no doubt that studies of naturally-occurring genes will be more than adequate. "Genetically-engineered organisms don't behave very differently from those involving natural genes," he says. "Indeed, there are a quite a lot of organisms we can study that have been genetically-engineered 'naturally' through pollutants and other man-made interventions."

However, he isn't under any illusions about the magnitude of the task that faces scientists in this field. "Ecosystems are incredibly complex things which is why half of the 300 hundred scientists involved in this network are microbial ecologists," he explains. "We need to understand the transfer processes more fully."

The network, which involves 50 different research groups throughout Europe, including non-EU countries such as Poland and the Czech Republic, isn't just confined to microbes. It will also be looking at the surface appendages on bacteria that can provide bridges to plant, yeast and animal cells as well as other bacteria. "We will be

investigating the very general gene transfer mechanisms. Although these are early days, the first workshop we organised was enormously productive and has already led to new collaborations which, in the long-run, should have a very positive effect on the development of this field."

Combatting misconduct in medical research

Mounting pressures to publish scientific results and the prospect of financial rewards are just two of the driving forces that have been behind a few isolated cases of plagiarism, piracy and fraud in medical research over the last few years.

To combat this rare but disturbing problem and ensure the integrity of the research they fund, the European Medical Research Councils (EMRC) have established general guidelines for preventing misconduct which professional bodies, senior researchers and the institutions that employ them should adhere to.

Initially published in *The Lancet* medical journal, David Evered and Philippe Lazar of the EMRC identified three broad ways to minimise the risk of fraud and misconduct:

Education, training and standards

Although the EMRC is strongly in favour of each professional body and research establishment drawing up its own guidelines on 'good research management' and laboratory practice, it is believed there are certain general principles that should be adhered to by all institutions. These include making it clear who is responsible for supervising and training researchers; proper guidance on the conduct of the project, data management and aspects of publication; maintaining easily-understood records for at least five years after publication; evaluating and statistically verifying data before its publication; presenting sufficient experimental detail; and citing fully relevant work by others. Harvard Medical School's *Guidelines for*

Investigators in Scientific Research is one possible model institutes could use.

Reducing pressures that lead to misconduct

Reducing the pressure on researchers to publish is an important step in maintaining high standards. There are various ways to do this, from taking proper account of the career needs of student or junior investigators to placing greater emphasis on quality, not quantity, in the evaluation of publications. In addition, all sources of financial support, such as field trials sponsored by pharmaceutical companies, should be declared and approved by the employing body. It is also possible that psychiatric illnesses or personality disorder may lead to fraud and colleagues should be aware of this and arrange for help for the researcher concerned.

Effective deterrents

All employing bodies (universities, research institutions etc.) should have agreed procedures for dealing with allegations of scientific misconduct and these should be publicised to all staff. Investigations should be rapid, confidential and fair to both the complainant and the accused, who should be presumed innocent until concrete evidence to the contrary is revealed. There should also be arbitration and appeals procedures.

Euresco speeds up molecular chaperone research

Keeping on top of the latest developments in biology isn't easy especially when there are nearly 15,000 journals covering this field. However scientists specialising in molecular chaperones, one of the hottest fields in biology and an area of research that could lead to cures for cystic fibrosis and other diseases associated with malfunctioning proteins, have found there is a way round this problem.

Molecular chaperones are used in cells to make sure that proteins fold properly and don't aggregate. The failure of proteins to fold and remain folded is one of the driving forces behind diseases such as cystic fibrosis. By understanding more fully how chaperones work it may be possible to overcome problems like these.

Research in this field is highly advanced, but there is so much information circulating around the world that it's difficult for scientists to keep pace with the subject. One way that specialists in this field have got over this hurdle is by holding a series of biennial European Research Conferences. Jointly funded by the ESF and the

EU, these are designed to bring together top researchers to discuss new frontiers of science and explore avenues for collaborative work at a European level. A key feature of them is that they include a high proportion of young researchers, typically 40 per cent.

"Without these types of conferences progress would be very slow," says Professor Costa Georgopoulos at the University of Geneva and the Chair of the most recent EURESCO conference on molecular chaperones, held in Crete in 1995. "There's so much information around you need the experts to get up and say what they're doing in a nutshell, discuss it and give young researchers the opportunity to ask questions. It's a very efficient way of exchanging ideas and information, forging collaboration and creating a new family of researchers."

New solutions for degenerative diseases

Specialists across Europe are pooling their expertise to develop new strategies for dealing with Parkinson's and other degenerative diseases through gene transplants.

Currently, approximately one in 2,000 people in Europe suffer from Parkinson's while 11 in 100,000 are debilitated by Huntington's Disease. Although much higher proportions of the population are afflicted by cardiovascular diseases and cancers, neurological diseases like these are becoming an increasingly acute problem as Europe's population gets older. The health care costs can also be significantly higher.

Scientists have successfully developed neural transplantation therapies for Parkinson's and Huntington's, but they have been restricted by the shortage of tissues needed to provide the genes. Typically they have had to rely on embryonic tissue from foetuses, which also raises ethical questions. In addition, the techniques used are not terribly efficient.

To overcome these and other problems, three groups of scientists from France, Sweden and the UK have been investigating alternative solutions as part of the ESF's programme on European Neuroscience. This has involved identifying different sources of cells for transplantation, including finding ways to replicate cells from embryonic tissue, and developing primary models to evaluate the relative effectiveness of these new strategies for gene therapy.

"The expertise needed to do this doesn't exist in one country which is why collaboration is so important," says Dr Stephen Dunnett at the University of

Cambridge, one of the principal investigators. "Sweden provides expertise in transplantation procedures, France offers genetic manipulation skill while the UK's strengths lie in functional assessments and evaluation of the effectiveness of the different strategies. Basic biology has undoubtedly advanced as a result of our experiments and Europe can now legitimately claim to be the leader in this field."

Although the project has resulted in a number of important publications, it will be several years until the researchers' work is put to the test in clinical trials.

Humanities

During the year, the Standing Committee for the Humanities reflected on its fundamental role in Europe, partly as a result of our contribution to the ESF's suggestions for the next Framework Programme, but with the added incentive that the Maastricht Treaty has opened up, for the first time, the possibility for humanities research to participate fully in EU funding programmes. Issues examined included problems related to cultural identity, diversity and integration all of which cannot be dealt with adequately without a profound knowledge of the, often centuries old, religious, linguistic, political and cultural characteristics of the present regional communities. In these and other areas, the humanities are uniquely well equipped to contribute to a deeper understanding of contemporary society. For instance, changes taking place in our norms and values, not least as a result of the influence of the modern media, have to be considered urgently. Linguistic, aesthetic and historical dimensions cannot be left out of such an analysis. A second major problem to which the humanities can contribute, in collaboration with the social sciences, concerns the didactic methods and content of school education - areas in need of fundamental revision taking into account the impact of other media. These new challenges, added to the launch of a new programme on the Individual and Society in the Mediterranean Muslim World, have all worked to keep the SCH very much on the move.



Professor Wim Blockmans,
*Chairman of the Standing Committee for
the Humanities*

Recapturing the public's enthusiasm for basic science

Scientists will have to rethink the way they communicate their work to policy makers and the general public if they are to recapture the enthusiasm and support for science that was enjoyed during the 19th century, claims a member of an ESF research programme.

"After Lavoisier published his *Traité élémentaire* in 1789, when it is often said that chemistry was born, there was enormous public interest in science," says Professor David Knight at the University of Durham in the UK. "Part of this stemmed from the realisation that science had important industrial applications. Suddenly you didn't need natural fertilisers or dyes any more, you could synthesise them. But the public was only aware of this because scientists communicated their ideas in a colourful and exciting manner that was intelligible to a lay audience. In the 19th century, middle-class professionals and others used to flock to lectures by people like Faraday and Davy."

"Over time, as science became more specialised and developed its own nomenclature, it became more remote. Now scientists are trained to write in a very technical and passive way which might be of interest to people with PhDs but not the general public. The division between basic and applied research, which occurred in the second half of the 19th century, has also distanced scientists from technologists."

Knight is a member of the Steering Committee of the ESF's programme on The Evolution of Chemistry in Europe, 1789-1939. Although the programme is looking at a wide variety of issues, from the social history of chemistry to strategies of chemical industrialisation, a

Michael Faraday at the Royal Institution

In the 19th century, middle-class professionals and others used to flock to lectures

by people like Faraday and Davy.

By courtesy of the Royal Institution



recurring theme that has come out of this initiative is the importance of communication for the development of chemistry and science in general. Language was inevitably an important vehicle and early scientists employed it imaginatively and clearly to draw attention to their work, says Knight. The 19th century chemist Colin MacKenzie is a case in point. His descriptions brought experiments to life, creating a sense of immediacy, in stark contrast to the style of today's scientists. "When the compound flame fell upon Lime, the splendour of the light was insupportable to the naked eye," he wrote, "And when viewed through deep-coloured glasses (as, indeed, all experiments ought to be), the Lime was seen to become rounded at the edges..."

The poet and philosopher Samuel Taylor Coleridge, a keen follower of science, compared men like MacKenzie to poets: "...so through the creative power of a profound observation of a Davy, a Woollaston, or a Hatchett...we find poetry, as it were, substantiated and realised in nature; yea, nature itself disclosed to us...as at once the poet and the poem." In fact, Coleridge told a friend that he went to Davy's lectures to improve his stock of metaphors.

However, the research programme found that language could also be a barrier to the development of science. During the 1800s, for instance, French and Italian were the most commonly spoken languages amongst the scientific community, which meant that ideas published in German, including the pivotal concept of linking research and training in one institute, could take a long time to filter through to other

parts of Europe. As science became more specialised, chemistry and other disciplines also developed their own scientific 'languages', expressing ideas through chemical symbols, equations and other devices, which tended to drive a wedge between them. "Although these developments helped scientists communicate ideas within their respective disciplines, they cut them off from other groups," says Knight. "A chemical equation, for instance, can be pretty forbidding to a mathematician."

Despite these linguistic hurdles, scientists travelled widely throughout Europe, an activity that was critical to the development of chemistry. When the English chemist Alexander Williams visited the positivist Auguste Comte in Paris, for example, the meeting focused Williams's mind on the role of theory, sparking off the idea of a testable structure for ether, which represented an important step forward for organic chemistry. Mendeleev's lecture trip to Britain also stimulated the widespread use of periodic tables, making chemistry much easier to learn. In his native Russia, his ideas were less readily embraced as he was considered a social outcast due to his support for student democracy and his decision to get divorced. "One of the striking findings of the programme is how scientists' reputations differed at home and abroad," comments Knight.

Another important revelation was how scientific advances in Germany were driven by intense competition between rival centres of excellence, often set up by 'professor-entrepreneurs'. "The French lost out because they operated a very centralised and uncompetitive

system," says Knight.

Of course, in between the advances there were a lot of failures and disagreements about how to move forward and Knight believes this message needs to be hammered

home to the public. "Too much of the teaching about science is so dogmatic and creates the expectation that scientists always have the right answers. This can create confusion when problems

such as BSE or 'mad cow disease' pop up and we don't have the solution. We not only need to communicate more effectively what we can do, but also the limitations of science and how it develops."

European integration may just be a dream

European integration is unlikely to become a reality unless policy makers learn from history and take the cultural diversity of individual regions into account, according to a leading researcher who has been investigating the origins of the modern state in conjunction with 100 other academics in 20 countries across Europe.

"Cultural diversity is one of the hallmarks of Europe," says Professor Wim Blockmans, director of the ESF's programme on The Origins of the Modern State in Europe (13th-18th centuries) and Chairman of the Foundation's Standing Committee for the Humanities. "Unfortunately, over the last 40 years the development of Europe has been driven by economic arguments, ignoring the fact that individual regions have a strong sense of community and belonging which is deeply rooted in history. Regardless of the economic arguments for European union people will not accept the idea of integration unless they feel an emotional attachment to it.

"You cannot impose a supranational structure on long-established structures such as cities, communes and regions. You have to form states from these structures and take their cultural diversity into account. It should be a bottom-up approach." Even the so-called 'absolute monarchs' of the past realised this,

as researchers in the Origins of the Modern State programme have discovered. "The whole concept of the absolutist state - where power is concentrated in the hands of the monarch and a few ministers - is a myth," says Blockmans. "In 17th century France, for example, which is often held up as model of absolute power, we found that the king had to give the regions a large level of autonomy as state officials couldn't reach or penetrate these parts. His power was much weaker and more decentralised than previously thought. People related much more strongly to their existing communal and regional structures than the notion of an absolute state. These were their daily realities. In fact, the idea of the absolute state was mainly rhetorical - it was propaganda. It didn't exist in a physical sense."

To spread their propaganda about the nation state, the researchers found that rulers relied heavily on iconography and symbolism. "Between the 13th and 18th centuries, when the idea of the national state was born, most people couldn't read so monarchs had to express their power visually in an attempt to create an emotional link with the idea of the state. Versailles and the Italian city states, for example, all relied heavily on images of the power of the state through architecture, statues and paintings."

Wars were another device for trying to foster national unity, although these often backfired. During the 30 Years War in the 17th century, for example, the Swedish monarchy embarked on an aggressive and reckless campaign to expand in Europe, involving a huge army: one-in-14 people in the country were in the military. However this not only cost untold lives but also devastated

the region economically.

England launched an even more expansionist initiative, the 100 Years War, but managed to finance this through a flexible tax system. In fact, the very people who were being besieged paid most of the bill for the war through England's export taxes.

"One of the big achievements of this research programme was that, for the first time, we were able to compare state revenues before crucial moments in their development which gave some very important insights," says Blockmans. "We were only able to do this sort of comparative study by bringing together researchers from countries across Europe and involving a wide range of disciplines, from economic historians to art historians, who were very important in terms of understanding the symbolic dimensions of power."

Indeed, Blockmans believes international collaboration is the only way to study how modern states have developed. "There's been a lot of research into state formation at a national level, but no state ever grew on its own. It's always been an interactive process. You have to look at the pan-European picture."

More significantly, he thinks that the programme was an important step in establishing the contemporary value of a historical perspective and in revitalising historians' views of state formation. "We needed to modernise historians' views about this subject as they had been bypassed by political scientists' over the last two decades."

The only question is whether Europe's policy makers will learn from the lessons the historians have revealed. Only history will tell.



Asian insights

Links with Asia, which is rapidly becoming one of the most powerful economic and political forces in the world, have been enhanced through an ESF Committee set up in 1994.

Drawing on the combined expertise of the humanities and the social sciences, the Asia Committee is designed to strengthen and coordinate multidisciplinary research into issues associated with Asia, as well as develop closer ties with the region's academics. "It's relatively easy to establish scientific and technological links with Asia, but it's much more difficult to forge cultural ties," says Professor Thommy Svensson at the Nordic Institute for Asian Studies, Chairman of the Committee.

"To do this we need to deepen our knowledge of Asia. At the moment, the Asians know a lot more about us than we do about them."

During 1995, the Committee made considerable progress in this direction by awarding five post-doctoral Fellowships, enabling young researchers from Asia and Europe to study abroad, and by holding eight workshops on issues as diverse as rural entrepreneurs in Asia and South Arabian migration in the Indian Ocean. Nine more workshops are scheduled for 1996 covering subjects such as telecommunications and Chinese business practices.

Understanding Asian culture

"At the moment, the Asians know a lot more about us than we do about them."

Palaeolithic puzzle

Members of the ESF's Palaeolithic Occupation of Europe network have challenged the belief that the new phenomena that appeared in Europe 20,000 to 30,000 years ago, such as different types of dwellings and art were created solely in response to a deteriorating climate.

At a workshop in the Czech Republic, members of the network synthesised national data on climatic change during this period and found there was no solid evidence that the climate became more severe over this time. Instead the region was characterised by relatively stable low temperatures and open landscapes.

"Phenomena like these could be an expression of cultural change that was not climatically driven, but we won't know until we investigate this issue in more detail," says Dr Wil Roebroeks at the University of Leiden, secretary of the network. In addition to other workshops, the network has created a new database of archaeological evidence during the Palaeolithic period and established new criteria for evaluating this data.

Roman world goes on tour

New findings from an ESF research programme have inspired an international exhibition that will be seen in museums across Europe.

In 1997, museums in Austria, Britain, Germany, Greece, Holland, Spain and Sweden will be hosting an exhibition that reveals surprising new insights from the Foundation's programme on the Transformation of the Roman World, backed up by a catalogue published by the British Museum.

One of the most revolutionary findings that stemmed from this programme was that there was far more interaction between different parts of 'Roman' Europe than previously thought, creating a highly dynamic environment. "Historians will have to radically change the way they perceive this period," says Professor Javier Arce, one of the coordinators of the research programme. "Contrary to popular belief, the Roman world and what followed wasn't static, there was an enormous amount of transformation and interaction."

"Unless we'd been able to bring together scientists from European countries where there had been Roman occupation, we wouldn't have discovered this. It was like putting together the pieces from a puzzle."

As well as the exhibitions, the researchers will be publishing 15 volumes covering the results of the programme.

A mosque at Fès, Morocco

A new ESF programme will shed light on the relationship between the individual and society in the Mediterranean Muslim World.

New networks address important contemporary issues

Two new networks have been established that will illuminate important cultural and political changes that are currently influencing the shape of Europe.

Dialects

Social and cultural developments, such as the increasing mobility of workers and the growth of the mass media, are having an unprecedented impact on European dialects. In some cases they are blurring the distinctions between dialects, in others they are leading to revivals of old dialects as a way of asserting regional affiliations and identities, particularly as Europe becomes more international.

To analyse the forces behind these changes, the ESF has set up a network on The Convergence and Divergence of Dialects in a Changing Europe. Co-chaired by Professor Peter Auer at the University of Hamburg and Dr Frans Hinskens at the Royal Netherlands Academy of Arts and Sciences, the three-year network will bring together linguists from across Europe to discuss four broad themes. These will include how dialects and standard languages influence each other; the impact of different dialects on each other;

state borders and dialect convergence; and developing common theories and methods for analysing dialectical change.

Republicanism

A new network on republicanism will help us understand how this political tradition has shaped Europe since the Renaissance and its impact on current debates about federalism and other related issues. Chaired by Professor Quentin Skinner at the University of Cambridge, the network will concentrate on five main issues, which according to its committee are 'bristling with relevance' for the European Union and the newly emancipated eastern European states. These include republicanism as a form of anti-monarchism; the impact of republicanism on the rise of commercial society; political institutions of the republic; the political culture of republicanism; and historical perspectives of republicanism and the future of the European Union.



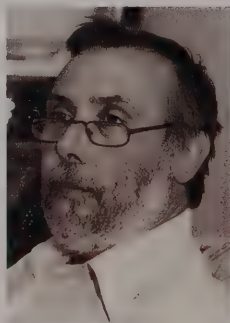
Individual programme

A new scientific programme has been approved called the Individual and Society in the Mediterranean Muslim World. The programme will attempt to define the relationship between the individual and society in a way that will enable us to understand, for each period of Islamic history, the organisation of interdependent relationships, the position attributed to the individual and the creation of a hierarchy of the values ruling the society.

Social sciences

Scientific research is increasingly being driven by societal demands. While this development presents a number of opportunities it also poses social scientists with several challenges. For instance, there is a danger that the emphasis on short-term results from applied research could lead to a depletion in our stock of knowledge. Consequently we need to develop mechanisms to renew it, as well as create investigative tools that can mobilise our pool of existing knowledge. Transdisciplinary research will also have to be stepped up to address complex socio-economic and technological issues such as ways to improve Europe's competitive edge. The Standing Committee for the Social Sciences (SCSS) is acutely aware of these demands and is tackling them through a range of strategic initiatives. The creation of common tools for comparative research is a particular priority, reflected in the SCSS's Beliefs in Government (BiG) programme, its recommendations about the value and feasibility of a European Social Survey and its European Data Integration efforts, amongst others. The Committee has also spent considerable time formulating its contribution to the ESF's submission for the next Framework Programme to ensure the social sciences are given their proper weight and place. In addition, interdisciplinary research has been fostered through joint initiatives with the EMRC and PESC and forthcoming research with SCH. Stronger ties with the SCSS's Member Organisations, supported by yearly meetings, are helping us achieve these goals and will no doubt continue to produce top quality research.

Professor Guido Martinotti,
Chairman of the Standing Committee
for the Social Sciences (SCSS)



BiG revelations about European support for the welfare state

Governments should think twice before they go any further down the road of dismantling the welfare state. According to the largest ever comparative study of European beliefs in government, the overwhelming majority of people think that the state has a responsibility to provide medical services, education and other welfare services, a view that has barely altered in 40 years. More significantly, they are prepared to pay higher taxes to maintain and develop these services.

These are just some of the findings from the ESF's Beliefs in Government (BiG) research programme which has brought together nearly 40 years of opinion surveys in 16 countries to assess European attitudes to democracy, politicians, the role of direct action, the welfare state and other aspects of government and politics.

The six-year programme, which involved 55 distinguished political scientists from across Europe, records a resounding vote of confidence in the welfare state in every European country. Over 90

per cent of people felt that the government had a responsibility for education, the elderly and medical care, while 84 per cent of the total sample believed it had a responsibility for housing and 91 per cent for job security. Medical care was top of the list (94 per cent) followed by housing and the elderly (both 92 per cent). In every country surveyed, the support for government involvement in these areas never dipped below 70 per cent. There was also strong support (about 65 per cent) for policies aimed at minority rights, gender equality and assistance for industry.

"It's quite astonishing," says Professor Kenneth Newton at the UK's University of Essex, one of the two co-ordinators of the programme along with Professor Max Kaase at Wissenschaftszentrum Berlin.

"There is simply no evidence that the basic Keynesian attitude to the welfare state has changed since the 1950s. Support for it remains as strong as ever and any attempts to dismantle it would be deeply unpopular. Indeed, one of the most striking things is that there is an enormous amount of consistency on this issue across Europe, much more than on most of the other issues we investigated, such as attitudes to politicians, which tended to exhibit a 'Jackson Pollock' effect where the picture was very messy and unclear."

However, the public doesn't believe governments should provide blanket support for every sphere of public life. They pick and choose between services they want cut or protected. In 1990, for example, 78 per cent of the population thought more money should be spent on welfare services and 20 per cent thought this type of expenditure should remain the same, while only 29 per cent wanted greater public investments in cultural and environmental issues and even fewer wanted more government expenditure on law and order and defence (10 per cent).

"The citizens of Western Europe seem to be rather more

sophisticated than many theories allow," says Newton. "They distinguish between and discriminate between different types of public policies and programmes, choosing to support some strongly, others less strongly and some not at all. Voters are not fools."

More interestingly, the public is prepared to pay higher taxes to support the core components of the welfare state, although, as Newton points out, "They don't want to finance scroungers." For example, when presented with the question, 'Government services such as health, education and welfare should be extended, even if it means some increases in your taxes' 64 per cent of people said 'yes', with 71 per cent of Britons agreeing to this proposition.

He adds, "You have to ask them a sensible question such as 'would you be prepared to pay more taxes for a particular public service, such as education', not 'do you think taxes should be increased'. If you ask the first, the answer will probably be 'yes', if you ask the second, the answer will almost certainly be 'no'."

In terms of the taxation system itself there was an equally consistent support for the view that people with high incomes should pay a larger proportion of their earnings in taxes than those who earn lower incomes, indicating a desire for a progressive tax system. Eighty per cent of people expressed this opinion. Indeed, 82 per cent of the population said that governments have a responsibility to reduce income differences between rich and poor. "There's a general feeling that the poor pay too much, the middle income groups slightly too much and that the rich get away with murder," says Newton.

The public's attitudes to taxation and other welfare issues, though, haven't always been this strong. In certain countries in certain years, public opinion is much more ambivalent, but as Newton explains these are short-term fluctuations

that often coincide with political change. "In Germany and Britain during the 1970s and 1980s, for example, shifts in opinion about the size of government coincided with swings between left-wing and right-wing government. Public opinion moved in the light of experience: policies of incoming governments were provisionally accepted at election time and later re-evaluated according to their impact. After Margaret Thatcher's first election victory the British were relatively contractionist in their views about government but by the time of her departure they were, if anything more expansionist than before. "You have to look at long-term trends, not short-term reactions in opinion polls, and when you do you find extraordinary, if selective, support for the welfare state. This was a conclusion across the BiG programme and one of its most important insights, whether we were looking at attitudes to democracy or politicians. It's the long-term perspective that counts."

The programme's findings are covered in detail in five books published by Oxford University Press:

Citizens and the State - edited by Hans-Dieter Klingemann and Dieter Fuchs;

The Impact of Values - edited by Jan W Van Deuth and Elinor Scarborough;

Public Opinion and International Governance - edited by Oskar Niedermayer and Richard Sinnott;

The Scope of Government - edited by Ole Borre and Elinor Scarborough;

Beliefs in Government - Max Kaase and Ken Newton.

New TERM for research into environmental resource management

The drive to manage Europe's environmental resources more effectively has been given fresh momentum thanks to a new ESF programme.

Established at the end of 1995, the primary aim of the Tackling Environmental Resource Management (TERM) programme is to stimulate collaboration between national research centres and different disciplines investigating environmental issues, notably economists, sociologists, psychologists and political scientists. Currently, a large number of social science researchers are working in this field across Europe. However, as Paul Koutstaal, the Scientific Coordinator of TERM, points out, they have tended to operate in isolated groups, usually confined to single disciplines and their respective national boundaries.

"Economists know each other quite well but other social scientists don't, largely because they started in this field at a later date," he says. "Our aim is to bring together people from national research programmes and get them talking across their disciplinary boundaries. We want to create a truly European community of scientists in this field."

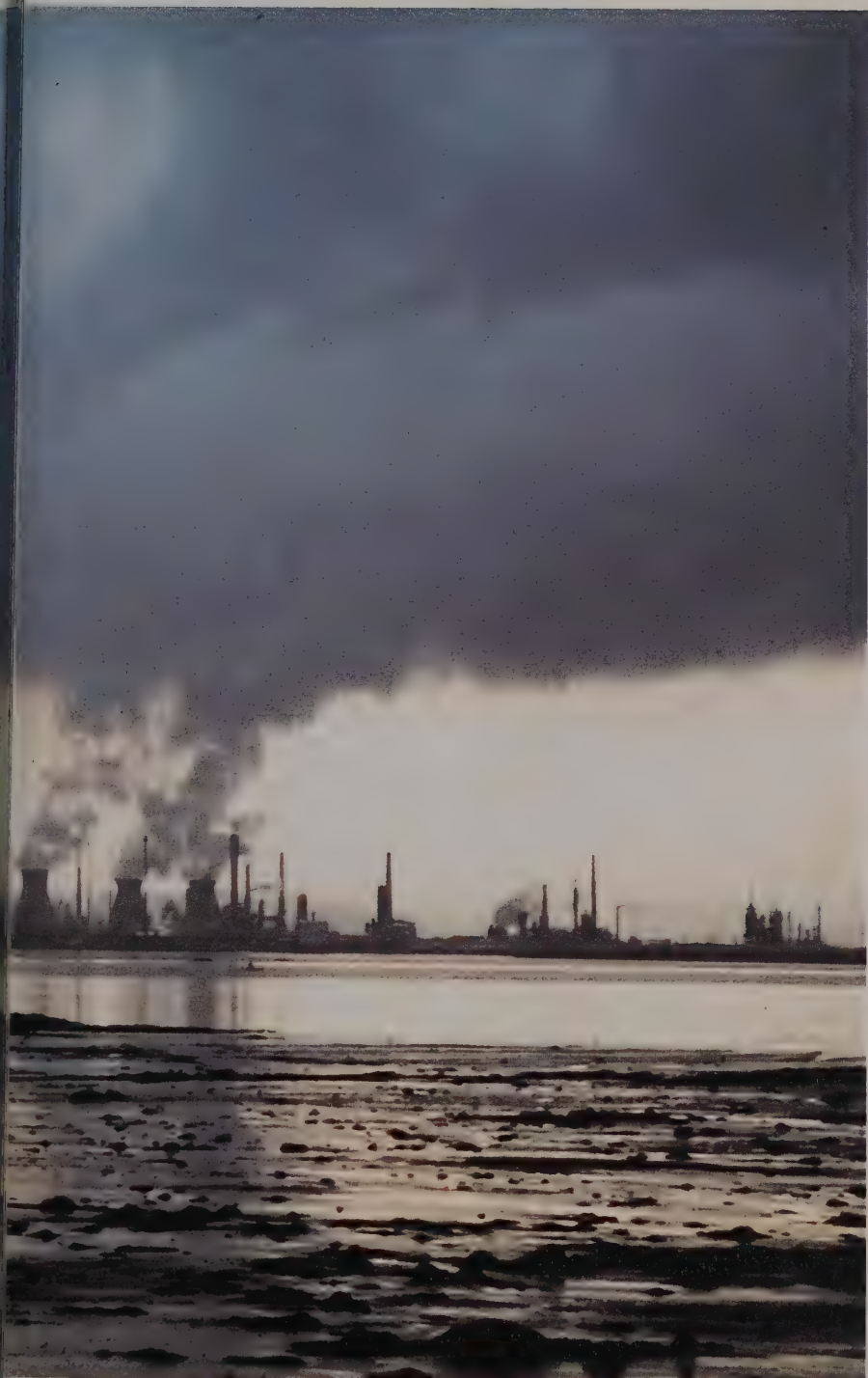
Tim O'Riordan, at the Centre for Social and Economic Research on the Global Environment at the UK's University of East Anglia, believes the time is ripe for this type of initiative. "There need to be better information flows between research centres and different disciplines, as well as better information about their activities. Modern technology, especially email, makes this

possible once the contacts and networks have been established."

The two-year programme will develop these networks and foster interdisciplinary collaboration by funding workshops, summer schools and exchanges, which will bring together senior and young researchers. Links have also been established with the EC's Fourth Framework programme activities on Human Dimensions of

Environmental Change in order to enhance the cross-fertilisation of ideas at a European level. In addition, Koutstaal plans to create a comprehensive database of social science research in Europe, including the contact details of people specialising in particular environmental resource management fields, information on past and current research and additional sources of information,





Koutstaal

**Coming to terms
with our environment**

The way that society and production is organised is having a very direct impact on the environment.

Through TERM social scientists are examining these relationships and developing policy measures for reducing pollution.

such as Internet sites.

The workshops and other collaborative initiatives will concentrate on four main research themes which were identified by a group of 40 researchers from 11 countries at a planning meeting held in the Netherlands early in 1995. These include the comparative dynamics of consumption and production processes; environmental

management and policy instruments under uncertainty; forms of international environmental cooperation and their development; and perception, communication and the social representation of environmental change.

"The subjects covered by the programme are all very relevant and interesting, especially those that will be looking at how

economic instruments, such as landfill taxes, can be used to create jobs and engineer other social changes," says O'Riordan. "Tools like these represent a big step forward."

After TERM comes to end, Koutstaal hopes that the networks that have been established "will have a life of their own and continue to work together without the ESF's support."

Widesweeping European social survey under consideration

Plans are being formulated for a widesweeping longitudinal survey of European social and political attitudes that will not only overcome the methodological problems of comparing countries' individual surveys, but also give social scientists the depth of information they need to advise policy makers on social developments in Europe and potential crises.

The ESF is investigating ways of carrying out a pan-European survey of social and political attitudes that will enable social scientists to compare like-for-like across the region and enrich the survey's analytical potential by integrating data from other sources. Until now, the various national surveys have tended to ask very different types of questions and dealt with an equally diverse range of concepts, which has made transnational comparisons very difficult. There have also been problems integrating data from public censuses and other sources, especially at a European level.

The driving force behind the new survey was the ESF's Beliefs in Government programme (see page 30), which unearthed many of the methodological problems associated with the data currently available. "To do this programme cost-effectively we had to rely on secondary data from longitudinal surveys from different countries," says Professor Max Kaase at the Wissenschaftszentrum Berlin, co-director of BiG. "But we found that countries used different samples, concepts and questions which made it very difficult to carry out a comparative analysis. The Eurobarometer survey contains systematically collected data,

but this only applies to EU countries and cannot be linked to public censuses and other sources of information. The other main source of systematic data, the International Social Survey Programme (ISSP), has similar limitations.

"It became clear that we needed long-term data on social and political orientations that was collected systematically across countries and time and that could be linked to other sources of information. By integrating the data with public census and geographical information, for instance, we could look at public attitudes to society by class and ethnic composition of particular neighbourhoods, which would enrich the analytical potential of the data."

To investigate the feasibility of creating a survey like this, the ESF intends to set up a Steering Committee, involving representatives from ESF Member Organisations from 21 European countries, including several outside of the EU. A Methodology Committee will also be established to iron out the conceptual, methodological and practical details of conducting the survey.

One of the biggest hurdles will be money. "It will be a costly exercise," says Kaase. "We're talking about surveying around 2,000 people in 21 countries every two years and all the associated costs this involves.

"There are two realistic options. We can either fund it on an *à la carte* basis and shop around Member Organisations for the money or attempt to finance it under the next European Union Framework Programme as a large-scale facility."

Regardless of the financial structure that underpins it, Kaase is in no doubt that Europe needs a survey like this. "It would be in everyone's interest," he says. "Political sociologists, for example, could use the data to investigate subjects such as political extremism in more depth, while economists would acquire a clearer picture of how individuals feel economies are developing. Long-term comparative data like this would also

enable social scientists to advise policy makers more effectively on critical issues arising in Europe and put short-term 'explosions' in context."

He also believes it would be "a valuable tool for educating young social scientists in the methodologies and analyses of comparative data.

It would underline the importance of equivalence of samples, questions and concepts." The survey could also serve as a blueprint for other comparative studies. Germany and various Scandinavian countries, for instance, have been carrying out a similar analysis of perceptions of social welfare and have expressed an interest in using the techniques applied to the proposed European social attitudes survey.

"It is a multi-purpose tool that can be used by many branches of the social sciences and policy makers," says Kaase. "This legitimates its costs, which, in reality, are tiny compared to the costs of many of the projects funded in the 'hard' sciences."

If the survey is considered feasible and the questions surrounding its methodology and funding are sorted out, the first wave could start in 1998.

A marginalised society?

The concept of integration is central to economic and monetary union in Europe, a development that is intended to sharpen the region's competitive edge and lead to greater equality and opportunities for everyone in the EU. However, an ESF research programme has revealed that the drive towards integration has in many cases had the opposite effect, fragmenting the region and marginalising sections of society.

As Costis Hadjimichalis at Greece's Aristotle University of Thessaloniki and David Sadler at the UK's University of Durham explain in the introduction to one of the books that came out of the ESF's scientific programme on Regional and Urban Restructuring in Europe:

"The resolution of uneven development and incorporation of regional differentiation has been encapsulated in the problematic notion of 'Europe of the Regions', a celebration of difference as part and parcel of a drive towards uniformity and equality. In this way, it is argued, the twin 'problems' of uneven regional development and widely differing regional political cultures can be subsumed with this broader project of harmonisation."

However, as they point out, "a neo-liberalist thrust to the 'integrationist' agenda sidelines significant questions to do with heightened inequality emerging from contemporary economic restructuring. This is evident all too clearly on the streets of big cities, in rural areas, in the differential exclusion of certain groups from the formal economy, in gender inequalities, and in growing ethnic, racial and religious tensions.

On closer examination Europe begins to look increasingly fractured, rather than more closely integrated."

An analysis of marginalisation in Brussels, the administrative heart of the EU, revealed the severity of this problem. When Belgium experienced significant economic growth in the 1960s and first half of the 1970s, researchers found that the indigenous suburban population became upwardly socially mobile and acquired the education to take on more middle-class jobs and the income to buy their own homes in new areas. To fill in the socio-economic and spatial gaps, an inexpensive and unskilled foreign workforce arrived and took over jobs in the construction and transport industry and in low-paid, labour-intensive service industries such as hotels, catering and cleaning. In Brussels, 28 per cent of the population are now foreigners, principally Moroccans, Italians, Spaniards and Turks, half of whom are guestworkers. They have congregated in the 'abandoned' districts where there is cheap

rented property. In addition, some ethnic groups, notably the Turks, have formed their own enclaves. More significantly, low wages mean all four groups find it difficult to escape these districts, a problem that is compounded by rising unemployment, which depresses wages further. Today, 40 per cent of Brussels' unemployed population is foreign.

However, the research programme, which involved over 70 European researchers, didn't just look at social marginalisation, it investigated a broad spectrum of issues associated with regional and urban restructuring in Europe. These ranged from how demographic trends, such as mass migration and the so-called 'second demographic transition', are affecting settlement patterns, labour markets and socio-cultural milieux, to how new systems of organisation and production being introduced across the world are threatening Europe's car industry, one of the most important economic sectors in the region.



Tales of the city

Europe's city streets reveal the differential exclusion of certain groups from the formal economy.

Medical and social scientists join forces

Collaboration between the medical and social sciences at a European level has tended to be fairly limited largely due to the fact that countries organise their health systems in different ways. In some there are established links with the social sciences, in others there aren't. However, the ESF is now actively encouraging these two disciplines to join forces on the European stage to address the health problems that stem from environmental degradation.

"The impact of the environment on health is one of the central concerns of our times, but medical scientists are increasingly realising that their tools are inadequate to deal with these types of problems," says Guido Martinotti, Chairman of the Foundation's Standing Committee for the Social Sciences. "They need the input of social scientists to understand how attitudes to health and other social and economic factors influence personal health."

During 1995, the ESF started planning a series of workshops that will bring together equal numbers of medical and social scientists to explore the scope for common research agendas based on comparative analyses. Two workshops were agreed, which will be held in 1996. One will be on health expectancy and will consider ways that we can learn from social and economic variations of health across Europe. The other will look at the possibilities for multidisciplinary comparative research into care of the elderly.

US and Asian links strengthened

Europe might have its share of social and economic problems, but they're becoming uncannily similar to those that many other parts of the world are experiencing.

"Social science research agendas are converging worldwide as social, economic and technological developments take on an international dimension," says Dr John Smith, Secretary of the ESF's Standing Committee for the Social Sciences. "If we are going to address these issues effectively, we need to work more closely with scientific bodies outside Europe and share and test innovative ideas."

During 1995 the ESF took a number of important steps in this direction.

In conjunction with the USA's National Science Foundation, for example, the ESF ran a summer school on the methodological problems surrounding the use of social science data in geographical information systems, involving a high proportion of young American and European researchers. There are now plans to hold exploratory meetings with the NSF to discuss ways of exchanging ideas about the requirements for future transport research.

In addition, the Foundation's Asia Committee, which involves the social sciences and the humanities, is looking at ways to strengthen the ties between academics in Europe and Asia (see page 28).

Exploratory grants launched

The development of comparative research has been helped by the launch of an exploratory grant scheme for the social sciences.

The ESF's new scheme is designed to give researchers the opportunity to test innovative ideas for medium- to long-term comparative studies, develop collaborative research proposals and widen and strengthen their research contacts. The emphasis is firmly on high-quality comparative research proposals that have European 'added value'. Grants of up to FF 200,000 are

available for workshops, exchanges and other collaborative initiatives. Successfully piloted in 1995, up to eight grants will be awarded this year. Although universities and research institutes can submit proposals on any topic, the ESF's Standing Committee for the Social Sciences has indicated that it is particularly interested in proposals on three main subjects in 1996: employment and social security systems; the social, economic and political implications of the development of digital technology; and informal economy, crime and social disorder.

Operational activities

**The following pages give details
of the ESF's operational activities
in 1995 including a brief description
of how the Foundation works,
Committee and Board reports,
a comprehensive listing and contacts
for our scientific activities,
and the year's financial statements.**

Contents

<i>How the ESF works</i>	39
<i>Committee and board reports</i>	40
<i>Standing Committee reports</i>	40
<i>Standing Committee for Physical and Engineering Sciences (PESC)</i>	40
<i>Standing Committee for Life and Environmental Sciences (LESC)</i>	40
<i>The European Medical Research Councils (EMRC)</i>	41
<i>Standing Committee for the Humanities (SCH)</i>	41
<i>Standing Committee for the Social Sciences (SCSS)</i>	41
<i>Conference and network committee reports</i>	42
<i>European Research Conferences (EURESCO)</i>	42
<i>Network Committee</i>	42
<i>Associated board and committee reports</i>	42
<i>European Boards for Marine and Polar Science (EMaPS-Boards)</i>	42
<i>Committee on Radio Astronomy Frequencies (CRAF)</i>	43
<i>European Committee on Ocean and Polar Science (ECOPS)</i>	43
<i>European Space Science Committee (ESSC)</i>	43
<i>Nuclear Physics European Collaboration Committee (NuPECC)</i>	43
<i>Scientific programmes</i>	44
<i>Physical and engineering sciences</i>	44
<i>Life and environmental sciences</i>	46
<i>Medical sciences</i>	49
<i>Humanities</i>	50
<i>Social sciences</i>	51
<i>Scientific programmes at a glance</i>	52
<i>Scientific networks</i>	54
<i>Physical and engineering sciences</i>	54
<i>Life and environmental sciences</i>	55
<i>Medical sciences</i>	56
<i>Humanities</i>	57
<i>Social sciences</i>	58
<i>Scientific networks at a glance</i>	59
<i>European research conferences (EURESCO)</i>	60
<i>Publications</i>	62
<i>Structure of the ESF office</i>	64
<i>Board and committee membership</i>	65
<i>Member organisations</i>	70
<i>Finance and accounts</i>	72

How the ESF works

The ESF's main decision-making forum is its General Assembly which brings together senior representatives of all of the Foundation's Member Organisations at an annual meeting in November in Strasbourg.

Implementation of the Assembly's decisions is overseen by the Foundation's Executive Council which meets three times a year. It approves the setting up of new activities, prepares the work of the next Assembly and ensures effective communication with Member Organisations and other relevant institutions. Along with the ESF President and Vice-Presidents, the Executive Council is made up of at least one elected member from each country with Member Organisations and from a balanced range of disciplines. Since 1994, it has been helped in its work by two new ad-hoc committees on Membership and Finance.

Ensuring continuity of ESF business between meetings of the Executive Council is the responsibility of the Board. It is constituted by the President, Vice-Presidents, up to five members elected from the Executive Council, and the Secretary General.

In addition, the ESF's ability to run a wide range of activities from organising exploratory workshops to providing science policy advice is crucially dependent on the contribution of its various committees and boards.

Its five Standing Committees (medical sciences, life and environmental sciences, physical and engineering sciences, humanities and social sciences) are made up of leading scientists and representatives from the Foundation's Member Organisations and are responsible for identifying scientific priorities, formulating strategies, developing research agendas and launching new research programmes.

The Foundation's Networks and European Research Conferences are overseen by separate steering committees reporting to the Executive Council and a number of other committees and boards have been set up in scientific areas requiring specific attention.

The day-to-day running of the Foundation's business is taken care of by the ESF office, directed by the Secretary General, based in Strasbourg.

Assembly, Executive Council and Board meetings 1995

JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER

21 Board and joint meeting with Board of Academia Europaea

9 Board+Standing Committee Chairmen

10 Board

4 Board

4 5 Executive Council

5 Board+Standing Committee Chairmen

21 Board

21 Board

21 22 Executive Council

28 Board+Standing Committee Chairmen

22 Board

23 Executive Council

23 24 Assembly

Committee and board reports

Standing Committee reports

Standing Committee for Physical and Engineering Sciences (PESC)

The new Standing Committee for Physical and Engineering Sciences, which is based on a wide and balanced disciplinary spectrum of professional members, added to the ESF-wide initiative to identify priority themes for the EU's Fifth Framework Programme by highlighting four key themes within its field: Large Scale Facilities, Telematics and Information, Cooperation with Third Countries and Horizontal Disciplinary Inputs on Engineering and Basic Sciences (Chemistry, Physics and Mathematics).

Seven PESC working parties were set up to explore these issues. The Committee considers the subject of Large Facilities to be of particular relevance and believes that the ESF is ideally placed to act as a clearing house for these in cooperation with its Member Organisations, other European scientific bodies, such as EuroHORCs, and most notably the EC. Indeed, PESC has been approached to investigate, evaluate

and promote the scientific-strategic case for several medium to large facilities within Europe. During the year, for example, PESC looked at the cases for new neutron sources for Europe (see page 10 for the full story) and a 100 Tesla-Science Lab, proposed by eight high-field magnet laboratories in Europe.

The Committee also agreed to extensions to two trans-disciplinary programmes: Chemistry of Metals in Biological Systems and Process Integration in Biochemical Engineering. Unified procedures for reviewing, evaluating and promoting research programmes are being considered. It was recognised that Member Organisations should be informed as early as possible of any serious new proposals for *à la carte* programmes in order to give them enough time to prepare and contribute. The Committee is also looking at harmonising the policies for 'bottom-up' and 'top-down' proposals.

In addition, PESC took steps to forge closer links with the ESF's Associated Committees, such as the European Space Science Committee, and external committees, such as the European Union of Physics Research Organisations (EUPRO).

Standing Committee for Life and Environmental Sciences (LESC)

The Standing Committee for Life and Environmental Sciences, created out of the former European Science Research Councils as part of the ESF's strategy to provide a more focused and responsive approach to basic science within Europe, held its first meeting in 1995.

The Committee inherited 18 programmes and nine networks and other initiatives. It has since discussed ways of dealing with future proposals and agreed to launch four further programmes based on their respective strengths and scientific merit: European Lake Drilling Programme (ELDP); European Project for Ice Coring in Antarctica (EPICA); Quaternary Environment and the Eurasian North (QUEEN); and Transport Processes in the Atmosphere and the Ocean (TAO). In addition, two-year extensions were granted to three existing programmes: European Ice Sheet Modelling Initiative (EISMINT); Chemistry of Metals in Biological Systems (METBIO); and Process Integration in Biochemical Engineering (PIBE).

An important component of the Committee's work throughout the year was the preparation of recommendations for the ESF's submission for the EU's Fifth

Framework Programme and, in particular, the identification of priority research areas. Several have been pinpointed and work in these fields will be encouraged by forthcoming exploratory workshops, including one on Plant Adaptation, an important issue for agricultural production. Other workshops that are in the pipeline include Molecular Physiology and Theoretical Biology.

LESC also investigated the value of large research facilities and developed more systematic links with the ESF's Network Committee.

The European Medical Research Councils (EMRC)

The European Medical Research Councils built on the ESF's new strategic role through several new initiatives. An important part of this move forward was the creation of the European Medical Research Councils' Policy Statement which outlines the Committee's main objectives. These range from promoting interactions between the biomedical and health research communities to developing European scientific strategies and stimulating collaboration in priority research areas.

The Committee also debated the priority research areas that should be covered by the EU's Fifth Framework Programme. Possibilities include the environment and health, health and ageing, bioethics, and information technology. It was also felt that the ESF could contribute to the Framework Programme in the fields of research infrastructure - notably by acting as a clearing house for large facilities - training and improving peer review and proposal selection, amongst other issues. The Committee reinforced the ESF's commitment to a more

strategic role by developing a number of other ideas.

In conjunction with the World Health Organisation and the EC, for instance, the Committee is bringing together scientists from a range of disciplines to help tackle the issue of the Environment and Health. To stimulate research in this field, the EMRC proposed to launch a research programme.

It also agreed to collaborate with the Standing Committee for Social Sciences on two topics: Social Variations in Health. Expectancy and Organisation of Health Care for the Elderly. In addition, a workshop on Male Reproduction was held, while one on Register-based Studies is planned for 1996. Furthermore, it was decided to continue with the EMRC's Clinical Collaborations. The question of medical ethics was given a boost too when members of the Committee produced a report on Misconduct in Medical Research, published in The Lancet medical journal, and a set of guidelines on Vaccine Trials in Developing Countries.

Standing Committee for the Humanities (SCH)

The Standing Committee for the Humanities invested a considerable amount of time and expertise in preparing a humanities agenda for the EC's Fifth Framework Programme and developing *à la carte* programmes.

Particular attention was paid to supporting initiatives that were more oriented towards the present world and involved other disciplines. The SCH's intention to work with the Standing Committee for the Social Sciences on Media Research is just one expression of this policy. The decision to launch a new scientific programme, Individual and Society

in the Mediterranean Muslim World, was another example. The SCH also gave its approval for the planning stage of a programme entitled Musical Institutions and the Circulation of Musicians in Europe, 1648-1900.

With regard to existing programmes, many produced impressive results. The Language Typology programme, which came to an end in 1994, submitted its findings and will be soon publishing 10 volumes, and Origins of the Modern State is also culminating in 10 volumes in English, Spanish and French. Other programmes that made impressive progress included the Transformation of the Roman World, the History of Chemistry and Concepts and Symbols in 18th Century Europe. The Committee also launched a new scientific network called Republicanism: A Shared European Heritage.

Standing Committee for the Social Sciences (SCSS)

The SCSS continued to make considerable progress, launching a number of new initiatives. In the wake of the ESF's strategic reappraisal, for instance, the Committee initiated its first strategic research programme, Tackling Environmental Resource Management, which is discussed in more detail on page 32 of this report.

The Committee's strategic input was further strengthened by the creation of two Task Forces that will enhance the ESF's ability to provide independent advice and make an effective contribution to the EU's Fifth Framework Programme. One is addressing Transport Research and the other the Development of Targeted Social Science research.

The SCSS also decided to play a strategic role in identifying the types of data needed

for European comparative research. It launched a new Feasibility Study for a European Social Survey and substantial progress has been made in identifying the issues it will need to address.

A new exploratory grant scheme was also successfully piloted and covered three priority research areas: European economic performance, the creation of European institutions and new family and household patterns. The quality of the applications was particularly high and six awards made; the scheme will continue on an expanded basis in 1996.

Following the SCSS's and EMRC's meeting on the research theme of Health and Health Care, it was agreed to convene exploratory workshops on Health Expectancy and the Organisation of Health Care for the Elderly. Initial plans were also made to cooperate with the Standing Committee for the Humanities on Media Research, while cooperation with Member Organisations was enhanced through a meeting with their Senior Research Administrators in order to strengthen the links between the SCSS's agenda and those of the Member Organisations. Observer status was extended to the United States' National Science Foundation in order to strengthen international cooperation and, in particular, to build upon the success of recent joint summer schools.

Conference and network committee reports

European Research Conferences (EURESCO)

Jointly funded by the EC and the ESF, European Research Conferences are designed to explore new scientific frontiers for Europe and work towards possible research agendas by bringing together leading scientists. A high proportion of young researchers are also invited to participate, enabling them to learn and establish important long-term contacts.

In 1995, EURESCO organised 45 conferences: 18 in the Life Sciences, 17 in the Physical Sciences, four in the Geosciences, three in the Social Sciences and three in the Humanities. Subjects ranged from European Transport and Communication Networks to the Biology of Molecular Chaperones. The average number of participants was 85 - 40 per cent of whom were aged 35 or less. This brings the total number of scientists who have attended these conferences over the last six years to nearly 14,000.

To maintain this momentum, the ESF's Board and Executive Council have supported EURESCO's proposal to add the unspent portion of 1995's budget to the 1996 budget, enabling further conferences to be organised.

Network Committee

Twenty-five ESF scientific networks were in operation during 1995, bringing the total number that have been funded by the Committee since its inception ten years ago to 51. Designed to stimulate research into

new fields by bringing leading European scientists together, the networks ranged from Fishes of the Antarctic Ocean to Catalytic Membrane Reactors, Systematic Biology and Social Transformations in Central and Eastern Europe.

Six new networks were launched in 1995: Electroluminescence in Silicon, Converging Methodologies in Astronomy, Hominoid Evolution and Environmental Change in the Neogene of Europe, Republicanism: a shared European heritage, Political-economic Dimensions of Enlargement and New Membership of the European Union, and the Convergence and Divergence of Dialects in a Changing Europe.

A second five-year review of the Network Scheme was initiated and will be reported in 1996.

Associated board and committee reports

European Boards for Marine and Polar Science (EMaPS-Boards)

The European Boards for Marine and Polar Science were set up in 1995 to develop strategies that will enable European marine and polar scientists to make more effective use of their research capacity and tackle major long-term research problems, such as global warming, which are beyond the financial reach of a single nation.

The Boards form an informal non-governmental body under the ESF's auspices. Each Board has an Executive Committee, consisting of a Chairperson and two Vice-Chairpersons. To ensure effective coordination of activities between the two Boards,

the Executive Committees of the two Boards meet together and form the Joint Executive Committee of the Boards.

The inaugural meeting of the two Boards took place on 6-7 October 1995 in Paris and was attended by representatives of the ESF and the EC and 31 institutions from 17 countries. At this meeting the Boards elected their executive committees and began to discuss their future priorities.

Committee on Radio Astronomy Frequencies (CRAF)

The Committee on Radio Astronomy Frequencies, which represents all the major radio astrological observatories in Europe, was established in 1988 to coordinate representations to the various national and supranational radio regulatory bodies within Europe for the protection of the Radio Astronomy Service (RAS).

Amongst its achievements during the year, CRAF produced a widely publicised technical Handbook on Radio Astronomy, which provides a detailed account of the views and needs of the RAS. In particular, the handbook highlights the threat to radio astronomy bands from interference from radio and cell-phone activity on neighbouring bands. It argued that radio astronomy bands should not be sacrificed to the telecommunication giants in the next round of band allocations.

European Committee on Ocean and Polar Sciences (ECOPS)

Following the creation of the ESF's new Boards for Marine and Polar Science, the Foundation's capability in these scientific fields was further strengthened by the decision to renew support for the European Committee on Ocean and Polar Sciences, which is jointly managed by the ESF and EC.

ECOPS should continue to provide strategic advice to the EC on marine and polar science issues by working closely with the two new Boards.

European Space Science Committee (ESSC)

The European Space Science Committee, which covers space physical science, Earth observation and microgravity, plays an important role in providing independent advice at a European level. This was reflected in two position papers sent to Ministers in charge of space and space research in Europe. One dealt with the scientific use of the International Space Station Alpha, while the other covered all aspects of space science, Earth observation and microgravity and included recommendations on space science data policy. A third paper on small satellites was published in December.

The ESSC also commented extensively on the joint ESA-EU-EUMETSAT policy document on Earth observation and most of its recommendations have been taken into account. In addition, the ESSC is carrying out a study with the US Space Science Board to assess the reasons for the successes and failures of past and present collaborative space

missions between the USA and Europe. Plans are also in place to compile a European Space Science Directory with ESRIN, the network and data-handling facility of ESA.

Nuclear Physics European Collaboration Committee (NuPECC)

In recent years, NuPECC has continued to provide an important forum for discussing nuclear physics through its quarterly magazine, Nuclear Physics News International, and has helped scientists access European facilities through the publication of a new NuPECC Handbook, which includes descriptions and a map of active European laboratories.

Based on the analyses of 10 working groups, the Committee also published a report on the impact of nuclear physics on other sciences, entitled Impact and Applications of Nuclear Science in Europe: Opportunities and Perspectives. Amongst many other activities, NuPECC encouraged the study of nuclei under extreme conditions, such as high spin and isospin, and recommended the further development of radioactive beam facilities to investigate nuclear structures at extreme isospin values.

Scientific programmes

Often long-term,
ESF scientific programmes
carry out substantive
research projects
with multinational teams
of scientists.

The following pages
give details of the scientific
programmes and
their steering committees
being supported by the ESF
in 1995 and of the new
programmes commissioned
during the year.

Physical and engineering sciences

Chemistry of Metals in Biological Systems (METBIO)*

1991-1997

12 contributing organisations

Metals play a role in many important biological functions, such as the actions of most enzymes, the transfer of signals, and the formation of minerals as in teeth or bones. This research field is currently called bioinorganic chemistry. It has an interdisciplinary nature involving chemists, biochemists, as well as micro-biologists and spectroscopists.

C D Garner (Chairman) *United Kingdom*
J Ulstrup (Vice-Chairman) *Denmark*
I Bertini *Italy*
R R Crichton *Belgium*
S Forsén *Sweden*
C Gómez-Moreno *Spain*
F Gonzales-Vilchez *Spain*
H Sigel *Switzerland*
I Sóvágó *Hungary*
A Trautwein *Germany*
C Veeger *The Netherlands*
R Weiss *France*
A Xavier *Portugal*

ESF Scientific Secretary: **N Petersen**
 (until Aug 95) / **A Wiklund**
 ESF Contacts: **C Heiné/J Freshwater**
 Tel: (33) 88 76 71 21
 Email: cheine@esf.org

Control of Complex Systems (COSY)

1995-1999

14 contributing organisations

One of the central aims of COSY is to identify the extent of control systems expertise within individual countries and propose ways that it can be coordinated and developed more effectively at a European level. This field is becoming increasingly important for understanding the complex feedback mechanisms that occur in nature and man-made systems, such as nuclear reactors and air-traffic control systems.

M Thoma (Chairman) *Germany*
P Albertos *Spain*
K J Åström *Sweden*
M Blanke *Denmark*
Z Bubnicki *Poland*
A Dourado-Correia *Portugal*
P Frank *Germany*
M Gevers *Belgium*
K Keviczky *Hungary*
U Kortela *Finland*
R J Patton *United Kingdom*
W Schaufelberger *Switzerland*
E Tulunay *Turkey*
J C Willems *The Netherlands*

Observers

G Dimirovski *Former Yugoslav Republic of Macedonia*

A Isidori *Italy*

S Skogestad *Norway*

ESF Scientific Secretary: **H U Karow**

ESF Contact: **P Cosgrove**

Tel: (33) 88 76 71 06

Email: pcosgrove@esf.org

The number of "contributing organisations" refers to the number of organisations supporting financially a programme for all or part of its duration

Dynamics of Gas-Surface Interactions (DYNGS)

1991-1995

12 contributing organisations

Molecular reaction dynamics is beginning to be applied to processes occurring at solid surfaces, with relevance to catalysis and the microelectronics industry, in such areas as initial state dependence, electronic excitations, charge transfer in molecule-surface interactions, surface diffusion, and catalytic reactions.

D A King (Chairman) *United Kingdom*

G Casalone *Italy*

G Comsa *Germany*

G Ertl *Germany*

A Gonzalez-Ureña *Spain*

C Henry *France*

S Holloway *United Kingdom*

B Kasemo *Sweden*

A Kleyn *The Netherlands*

J Nørskov *Denmark*

ESF Scientific Secretary: H U Karow

ESF Contact: C Werner

Tel: (33) 88 76 71 28

Email: cwerner@esf.org

Kinetic Processes in Minerals and Ceramics (MINC)

1992-1996

12 contributing organisations

Most minerals and ceramics are formed at high temperatures and pressures. This programme is using *in situ* measurements to shed light on their properties and issues such as decay, corrosion and deformation.

E Salje (Chairman) *United Kingdom*

M Catti *Italy*

M O Figueiredo *Portugal*

J M Garcia Ruiz *Spain*

P Kofstad *Norway*

K L Komarek *Austria*

K Korsman *Finland*

A Krajewski *Italy*

Y Limoge *France*

F Seifert *Germany*

G van Tendeloo *Belgium*

ESF Scientific Secretary: H U Karow

ESF Contact: C Werner

Tel: (33) 88 76 71 28

Email: cwerner@esf.org

Mathematical Treatment of Free Boundary Problems (FBP)

1993-1997

17 contributing organisations

FBP will provide a deeper understanding of crystal accretion and other natural phenomena by using mathematical theories to analyse boundaries one of which is either moving or ill-defined.

J F Rodrigues (Chairman) *Portugal*

H W Alt *Germany*

A Bermudez *Spain*

M Chipot *France*

H van Duijn *The Netherlands*

M Frémond (to Nov 95) *France*

M A Herrero (to Dec 95) *Spain*

P Neittaanmaki *Finland*

M Niezgodka *Poland*

J Ockendon (to July 95) *United Kingdom*

M Primicerio *Italy*

ESF Scientific Secretary: H U Karow

ESF Contact: C Werner

Tel: (33) 88 76 71 28

Email: cwerner@esf.org

Process Integration in Biochemical Engineering (PIBE)*

1992-1997

9 contributing organisations

The main focus of this research is on integrated bioprocessing, an interdisciplinary approach that includes protein, metabolic and process engineering in order to link basic development in the biosciences with possible industrial application.

K Ch A M Luyben (Chairman)

The Netherlands

L M van der Wielen (Secretary)

The Netherlands

J J Van Beeumen *Belgium*

J M S Cabral *Portugal*

E Cernia *Italy*

S O Enfors *Sweden*

G Goma *France*

P Kieran *Ireland*

D Levine *Norway*

M Lilly *United Kingdom*

M Reuss *Germany*

U von Stockar *Switzerland*

L Viikari/R Aarts *Finland*

J Villadsen *Denmark*

ESF Scientific Secretary: N Petersen

(until Aug 95) / A Wiklund

ESF Contact: P Cosgrove

Tel: (33) 88 76 71 06

Email: pcosgrove@esf.org

Relativistic Effects in Heavy Element Chemistry and Physics (REHE)

1993-1997

10 contributing organisations

This Programme enables European scientists to share in forthcoming developments in Relativistic Quantum Chemistry and Relativistic Molecular Physics, bringing together the expertise of workers in different branches of the field and overcoming communication barriers.

P Pyykkö (Chairman) *Finland*

E J Baerends *The Netherlands*

J P Daudey *France*

K Faegri *Norway*

I P Grant *United Kingdom*

B Hess *Germany*

J Karwowski *Poland*

K Schwarz *Austria*

A Sgamellotti *Italy*

ESF Scientific Secretary: H U Karow

ESF Contact: C Werner

Tel: (33) 88 76 71 28

Email: cwerner@esf.org

Vapour-phase Synthesis and Processing of Nano-particle Materials (NANO)

1995-1999

9 contributing organisations

The scientific and technological issues of nanostructured particles and materials are becoming a wide R and D field of relevance to the technical sciences and beyond. To promote basic technology in Europe, this programme is building bridges between the aerosol and material science communities.

H Fissan (Co-Chair) *Germany*

J Schoonman (Co-Chair) *The Netherlands*

F Besenbacher *Denmark*

B J Briscoe *United Kingdom*

J Carlsson *Sweden*

M Grätzel *Switzerland*

* (also affiliated LESC) ** (also affiliated PESC)

J C Joubert *France*
E I Kauppinen *Finland*
R Winand *Belgium*

ESF Scientific Secretary: H U Karow
ESF Contact: P Cosgrove
Tel: (33) 88 76 71 06
Email: pcosgrove@esf.org

Life and environmental sciences

Airborne Polar Experiment (APE)

1995-1999

5 contributing organisations

The programme concerns the coordination of an airborne experiment which will make use of a former spy plane as a stratospheric platform for *in situ* measurements of the minor atmospheric components, which are responsible for the greenhouse effect.

L Stefanutti (Chairman) *Italy*
V Khattatov (Deputy Chairman) *Russia*
G Braathen *Norway*
G Busca *Switzerland*
P Crutzen *Germany*
R Jones *United Kingdom*
J Ström *Sweden*
G Visconti *Italy*

Observer
A Tuck *United States*
ESF Scientific Secretary: M Fratta
ESF Contact: P Pirra
Tel: (33) 88 76 71 29
Email: lesc@esf.org

Artificial Biosensing Interfaces (ABI)**

1993-1998

10 contributing organisations

This programme was developed through the former European Science Research Councils' Technical Sciences Committee, and links collaborating centres in the fields of characterisation of simple and complex substrates; substrate modification and coupling of biomolecules; matrix effects on biomolecule functions; transduction phenomena and biorecognition.

R P Revoltella (Chairman) *Italy*
M Mascini (Co-Chairman) *Italy*
S Alegret *Spain*
P Coulet *France*
W Göpel *Germany*
J M Kauffmann *Belgium*
M Koudelka-Hep *Switzerland*
J Lekkala *Finland*
B Liedberg *Sweden*
D S Papastathopoulos *Greece*
P Tunon *Spain*

ESF Scientific Secretary: J-H Kock (until Dec 95) / I Wüning
ESF Contact: B Schaller
Tel: (33) 88 76 71 18
Email: bschaller@esf.org

Biophysics of Photosynthesis (PHOT)**

1993-1997

15 contributing organisations

The study of photosynthetic reaction centres is an excellent model system for electron transfer reactions, which are crucial to many biological processes, and benefit investigations in molecular biology and biochemistry.

A J Hoff (Chairman) *The Netherlands*
J Aghion *Belgium*
R J Cogdell *United Kingdom*
G Garab *Hungary*
G Giacometti *Italy*
J Korppi-Tommola *Finland*
S Malkin *Israel*
P Mathis *France*
M E Michel-Beyerle *Germany*
M Miller *Denmark*
J Ormerod *Norway*
R Picorel *Spain*
S Styring *Sweden*

ESF Scientific Secretary: N Petersen (until Aug 95) / A Wiklund
ESF Contact: P Cosgrove
Tel: (33) 88 76 71 06
Email: pcosgrove@esf.org

Climate and Fauna: A Database of the Quaternary Mammals of Europe (DATA)

1994-1996

4 contributing organisations

Mammalian fossils provide a rich source of information for the reconstruction of environmental conditions of the past.

The Quaternary was characterised by strong climatic changes. A survey covering Europe in its entirety is necessary for the significant changes to be seen.

W von Koenigswald (Chairman) *Germany*
L Werdelin (Secretary) *Sweden*
J Chaline *France*
M Fortelius *Finland*

ESF Scientific Secretary: J-H Kock (until Dec 95) / I Wüning
ESF Contact: P Cosgrove
Tel: (33) 88 76 71 06
Email: pcosgrove@esf.org

ESF Consortium for Ocean Drilling (ECOD)

1986-1998

11 contributing organisations

The Ocean Drilling Program (ODP) is an international partnership, led by the US, of scientists and institutions studying the geological and tectonic history of ocean basins worldwide as well as our planet's palaeo-environment. Scientists from Belgium, Denmark, Finland, Greece, Iceland, Italy, the Netherlands, Norway, Spain, Sweden, Switzerland, and Turkey participate through ECOD.

ESF Management Committee for the ODP (EMCO)
S Egelund (Chairman) *Denmark*
H Hertogen (Vice-Chairman) *Belgium*
C Ehlers *Finland*
G Palmason *Iceland*
T Pedersen *Norway*
A Pérez-Estaún *Spain*
M L Ruscitto *Italy*
D A van der Kroef *The Netherlands*
M von Knorring *Sweden*
J-B Weber *Switzerland*
Y Yilmaz *Turkey*

ESF Scientific Secretary: M Fratta
ESF Contact: M A Comte
Tel: (33) 88 76 71 00
Email: macomte@esf.org

ESF Scientific Committee for the ODP (ESCO)
J McKenzie (Chairman) *Switzerland*
Yngve Kristoffersen (Vice-Chairman) *Norway*
I Premoli-Silva *Italy*
N Holm *Sweden*
M C Comas *Spain*
C Ehlers *Finland*
N Görür *Turkey*
A Sveinsbjornsdottir *Iceland*
N Mikkelsen *Denmark*

J Smit *The Netherlands*
D Weis *Belgium*
 Scientific Secretary: **S Spezzaferri** *Italy*

European Ice Sheet Modelling Initiative (EISMINT)

1993-1997

10 contributing organisations

In the context of understanding the role of ice sheets in the global climate system, mathematical modelling is central to studies of ice-sheet behaviour.

This programme came from work within the joint ESF/EC European Committee on Ocean and Polar Sciences.

C Doake (Chairman) *United Kingdom*
H Björnsson *Iceland*
H Blatter *Switzerland*
D Dahl-Jensen *Denmark*
D J Drewry *United Kingdom*
P Holmlund *Sweden*
P Huybrechts *Belgium*
A Letréguilly / C Ritz *France*
H Miller *Germany*
J Oerlemans *The Netherlands*
G Tabacco *Italy*

ESF Scientific Secretary: **M Fratta**
 ESF Contact: **P Pirra**
 Tel: (33) 88 76 71 29
 Email: lesc@esf.org

European Lake Drilling Project (ELDP)

1996-2000

8 contributing organisations

This project aims to recover specific annually laminated lake sediments to study the palaeoenvironmental conditions of Europe. In addition, a long list of other interesting parameters can be measured in these sediment samples such as past magnetic fields, palaeotemperatures, plan distribution through pollen analysis, sediment fluxes and, indirectly, the solar-terrestrial forcing.

J F W Negendank (Chairman) *Germany*
B E Berglund *Sweden*
F Gasse *France*
A Paus *Norway*
M Ralska-Jasiewicz *Poland*
G Seret *Belgium*
M Sturm *Switzerland*

F Trincardi *Italy*
H Vos *Germany*
 ESF Scientific Secretary: **M Fratta**
 ESF Contact: **P Pirra**
 Tel: (33) 88 76 71 29
 Email: lesc@esf.org

European Palaeoclimate and Man (EPC)

1989-1995

10 contributing organisations

This programme is reconstructing weather maps during the palaeolithic period that will enable scientists to assess human and natural effects on the climate during this period. Additional data will help researchers reconstruct the vegetation history during the last 10,000 years and model temperatures and other variables.

Advisory Committee and Co-ordination Committee
P Fricker (AC Chairman) *Switzerland*
B Frenzel (EPCC Chairman) *Germany*
S Andersen *Denmark*
A Berger *Belgium*
B Berglund *Sweden*
G S Boulton *United Kingdom*
J Dijkhof *The Netherlands*
M Eronen *Finland*
P Huttunen *Finland*
T Nanni *Italy*
H Oeschger *Switzerland*
G Orombelli *Italy*
L Reisch *Germany*
J L Turon *France*
H F Vugts *The Netherlands*
 ESF Scientific Secretary: **M Fratta**
 ESF Contact: **P Pirra**
 Tel: (33) 88 76 71 29
 Email: lesc@esf.org

European Project for Ice Coring in Antarctica (EPICA)

1996-2000

10 contributing organisations

Geographical location, ice thickness and climatology combine to make Antarctica the storehouse of the longest and most representative proxy data for the composition and temperature of ancient atmospheres. This project of complex logistic and scientific cooperation is the first

"Grand Challenge" identified by the European Committee on Ocean and Polar Sciences (ECOPS).

J Jouzel (Chairman) *France*
H Miller (Co-Vice Chairman) *Germany*
G Orombelli (Co-Vice Chairman) *Italy*
R Gendrin *France*
N Gundestrup *Denmark*
C Hammer *Denmark*
H-C Hansson *Sweden*
H Kohnen *Germany*
C Lorius *France*
J Oerlemans *The Netherlands*
D Peel *United Kingdom*
D Raynaud *France*
R Souchez *Belgium*
B Stauffer *Switzerland*
I Troen *European Commission*
J-G Winther *Norway*
 ESF Scientific Secretary: **M Fratta**
 ESF Contact: **P Pirra**
 Tel: (33) 88 76 71 29
 Email: lesc@esf.org

European Volcanological Project (EVOP)

1992-1996

8 contributing organisations

The project follows from an ESF network on volcanology, and concentrates upon six 'laboratory-volcanoes' to increase European scientific knowledge of these phenomena.

F Barberi (Chairman) *Italy*
V Arana *Spain*
J-L Cheminée *France*
V H Forjaz *Portugal*
M Fytikas *Greece*
A Hirn *France*
F Innocenti *Italy*
J Keller *Germany*
B Rodrigues *Portugal*
G Sigvaldason *Iceland*
 ESF Scientific Secretary: **M Fratta**
 ESF Contact: **P Pirra**
 Tel: (33) 88 76 71 29
 Email: lesc@esf.org

Europeprobe

1992-1998

14 contributing organisations

Europeprobe is designed to increase our understanding of the tectonic evolution of the Earth's crust and mantle and the dynamic processes that led to its current state. Drawing on the expertise of more than 500 geoscientists from 24 European countries, the programme is studying a section of the lithosphere that straddles Western and Eastern Europe, from the Atlantic to the Urals.

Scientific Steering Committee (ESSC) and Management Committee (EMC)

D Gee (ESSC Chairman) *Sweden*

D Maronde (EMC Chairman) *Germany*

A Adám *Hungary*

U Avedis *Austria*

A B Carlson *Norway*

S Egelund *Denmark*

K Fuchs *Germany*

A Green *Switzerland*

A Guterch *Poland*

J Kakkuri *Finland*

J Klerkx *Belgium*

D A van der Kroef *The Netherlands*

Y G Leonov *Russia*

P Matte *France*

L A Mendes Victor *Portugal*

C Morelli *Italy*

A Morosov *Russia*

G Ni Uid *Ireland*

R C Padgham *United Kingdom*

A Perez-Estaun *Spain*

G Poupinet *France*

R A Stephenson *The Netherlands*

M von Knorring *Sweden*

J-B Weber *Switzerland*

ESF Scientific Secretary: M Fratta

ESF Contact: P Pirra

Tel: (33) 88 76 71 29

Email: lesc@esf.org

Greenland Ice Core Project (GRIP)

1989-1995

7 contributing organisations

By drilling down three kilometers into the ice, this project was able to extract ice cores that reveal the annual development of the Earth's climate - and man's impact on it - over half a million years.

GRIP Steering Committee (SC) and Management Group (MG)

B Stauffer (SC Chairman) *Switzerland*

H Miller (MG Chairman) *Germany*

H B Clausen *Denmark*

R J Delmas *France*

N Gundestrup *Denmark*

C Hammer *Denmark*

S J Johnsen *Iceland*

C Lorius *France*

H Oeschger *Switzerland*

G Orombelli *Italy*

D Peel *United Kingdom*

R Souchez *Belgium*

E Wolff *United Kingdom*

ESF Scientific Secretary: M Fratta

ESF Contact: P Pirra

Tel: (33) 88 76 71 29

Email: lesc@esf.org

Population Biology (POBI)

1994-98

10 contributing organisations

This programme emanates from an ESF network on population ecology and genetics. There are three central themes: genetic conflicts, population structure and life histories which share a unifying perspective of evolution.

S Stearns (Chairman) *Switzerland*

R Barbault *France*

N Barton (until mid 95) *United Kingdom*

B O Bengtsson *Sweden*

C Godfray *United Kingdom*

I Hanski *Finland*

W Lampert *Germany*

V Loeschcke *Denmark*

J Pasteels *Belgium*

W van Delden *The Netherlands*

ESF Scientific Secretary: N Petersen

(until Aug 95) / A Wiklund

ESF Contact: P Cosgrove

Tel: (33) 88 76 71 06

Email: pcosgrove@esf.org

Quaternary Environment of the Eurasian North (QUEEN)

1996-2000

7 contributing organisations

The aim of this programme is to utilise the ongoing activities and projects operating in several sectors of the Eastern Arctic regions and the many bilateral projects

between Russian and Western European research groups in order to formulate a research programme which will study the modern and past environmental changes in a structured and coordinated manner.

J A Dowdeswell *United Kingdom*

S Funder *Denmark*

C Hjort *Sweden*

V M Kotlyakov *Russia*

J Mangerud *Norway*

S M Pryamikov *Russia*

M Saarnisto *Finland*

J Thiede *Germany*

C Schluechter *Switzerland*

ESF Scientific Secretary: M Fratta

ESF Contact: P Pirra

Tel: (33) 88 76 71 29

Email: lesc@esf.org

Transport Processes in the Atmosphere and Oceans (TAO)

1996-1999

8 contributing organisations

This programme concerns the transport processes in the geophysical fluids, atmosphere and oceans, mainly from a theoretical point of view. It is not only a nice exercise of difficult mathematics, but the results will be useful to applied scientists and decision makers in environmental policy.

V Artale (Chairman) *Italy*

A Babiano *France*

K Fraedrich *Germany*

P Haynes *United Kingdom*

A Provenzale *Italy*

J Rasmussen *Denmark*

E Aurell *Sweden*

S Gama *Portugal*

ESF Scientific Secretary: M Fratta

ESF Contact: P Pirra

Tel: (33) 88 76 71 29

Email: lesc@esf.org

Tropical Canopy Research (TCR)

1994-1998

5 contributing organisations

In this programme are studied the patterns and processes that lead to and maintain the immense diversity of life in the tropics. The programme should provide

a greater understanding of tropical forest ecosystem functioning and the significance of biodiversity in its structural and functional maintenance and regeneration.

E Linsenmair (Chairman) *Germany*

H Balslev *Denmark*

A Cleef *The Netherlands*

W Morawetz *Austria*

G Vendramin *Italy*

Observers

O Pascal *France*

S Sutton *United Kingdom*

ESF Scientific Secretary: N Petersen (until Aug 95) / A Wiklund

ESF Contacts: C Heiné/J Freshwater

Tel: (33) 88 76 71 21

Email: cheine@esf.org

Medical sciences

Developmental Biology (EDB)*

1992-1996

11 contributing organisations

The EDB's objective is to gain a clearer understanding of the genetic and molecular signalling hierarchies that regulate animal development.

S W de Laat (Chairman) *The Netherlands*

E Boncinelli *Italy*

P Ekblom *Sweden*

S H Fromm *Norway*

W J Gehring *Switzerland*

A Ghysen *Belgium*

P Gruss *Germany*

J B Gurdon *United Kingdom*

E Lehtonen *Finland*

J A Lepesant *France*

A McLaren *United Kingdom*

K Møllgård *Denmark*

Ch Nüsslein-Volhard *Germany*

ESF Scientific Secretary: J-H Kock

(until Dec 95) / I Wüning

ESF Contact: B Schaller

Tel: (33) 88 76 71 18

Email: bschaller@esf.org

European Neuroscience Programme (ENP)

1992-1996

20 contributing organisations

ENP brings together scientists from Europe's neuroscience centres and encourages interdisciplinary

collaboration through exchange visits, workshops, multinational research projects and thematic schools.

M M Burger (Chairman) *Switzerland*

J Dudel *Germany*

F Fazio *Italy*

A Ferrus *Spain*

S Grillner *Sweden*

J Hamori *Hungary*

H Hultborn *Denmark*

M R Issidorides *Greece*

H Lang *Finland*

B E Leonard *Ireland*

T Lomo *Norway*

G Moonen *Belgium*

R G M Morris *United Kingdom*

M Moulins (deceased) *France*

H Radner *Austria*

R Rahamimoff *Israel*

F Rubia *Spain*

J C Stoof *The Netherlands*

A M Thierry *France*

J Toscana Rico *Portugal*

Advisory Board

G Berlucchi *Italy*

R Frackowiak *United Kingdom*

W H Gispen *The Netherlands*

C Goridis *France*

T Hökfelt *Sweden*

F Holsboer *Germany*

F Rubia *Spain*

W Singer *Germany*

ESF Scientific Secretary: J-H Kock

(until Dec 95) / I Wüning

ESF Contact: C Durant

Tel: (33) 88 76 71 27

Email: cdurant@esf.org

Programme of Fellowships in Toxicology and Environmental Toxicology (PFT)*

1992-1996

15 contributing organisations

PFT provides up to 50 bursaries a year for training and research in toxicology, reinforcing studies on environmental toxicology.

L Vittozzi (Chairman) *Italy*

C Almaça *Portugal*

H Autrup *Denmark*

A Bernard *Belgium*

H Bolt *Germany*

F Clementi (till Dec 95) *Italy*

D S Davies *United Kingdom*

L Dencker *Sweden*

G Dirheimer *France*

H Greim *Germany*

S A Kyrtopoulos *Greece*

R Lauwerys (till Nov 95) *Belgium*

D Lison (as of Dec 95) *Belgium*

V M C Madeira *Portugal*

T Norseth *Norway*

F Oesch *Germany*

M Olsson *Sweden*

P Preziosi (as of Jan 96) *Italy*

M Pugh *Ireland*

E Rodriguez-Farré *Spain*

Ch Schlatter *Switzerland*

J Schou *Denmark*

M I Sorsa *Finland*

J Tuomisto *Finland*

E Vilanova *Spain*

ESF Scientific Secretary: J-H Kock

(until Dec 95) / I Wüning

ESF Contact: P Pirra

Tel: (33) 88 76 71 29

Email: pft@esf.org

Molecular Neurobiology of Mental Illness (MNMI)

1990-1996

14 contributing organisations

MNMI is mapping the entire human genome to identify the genes that are responsible for schizophrenia and affective disorder.

J Mallet (Chairman) *France*

M Ackenheil *Germany*

L Amaducci *Italy*

K Beyreuther *Germany*

F Clerget Darpoux (Consultant) *France*

K Davies *United Kingdom*

R Fog *Denmark*

P McGuffin *United Kingdom*

J Mendlewicz *Belgium*

M R Niermeijer *The Netherlands*

L Peltonen *Finland*

A M Rosina *Italy*

L A Sandkuijl (Consultant) *The Netherlands*

ESF Scientific Secretary: J-H Kock

(until Dec 95) / I Wüning

ESF Contact: B Schaller

Tel: (33) 88 76 71 18

Email: bschaller@esf.org

* (also affiliated LESC)

Humanities

Asian Studies*

1995-1997

10 contributing organisations

The ESF Asia Committee was set up to develop interdisciplinary collaborative projects in the broad field of Asian Studies. A post-doc fellowship programme has been launched along with a scheme to support high quality workshops in Asian Studies with an emphasis on collaboration and joint initiatives with scholars and institutions from Asia and the United States.

Th Svensson (Chairman) *Denmark/Sweden*
D Lombard (Vice-Chairman) *France*
W A L Stokhof (Secretary) *The Netherlands*
J C Breman *The Netherlands*

E Collotti Pischel *Italy*

J-P Drège *France*

G Dudbridge *United Kingdom*

Gh Gnoli *Italy*

T King *United Kingdom*

I Hijiya-Kirschner *Germany*

W Klenner *Germany*

B Kölver *Germany*

U Kratz *United Kingdom*

C MacDonald *France*

W Marschall *Switzerland*

J Martinussen *Denmark*

G Oberhammer *Austria*

J R Pitte *France*

K M Schipper *The Netherlands*

N Thê Anh *France*

P-E Will *France*

Observers

M Boiteux *Ministère de l'Enseignement Supérieur et de la Recherche, France*

C Glück

M Van Hall *Ministry of Education,*

Cultural Affairs and Science, The Netherlands

C Kurokawa

ESF Scientific Secretary: M Sparreboom

ESF Contact: C Durant

Tel: (33) 88 76 71 27

Email: cdurant@esf.org

Concepts and Symbols of the 18th Century in Europe (CSE)

1994-1997

11 contributing organisations

The 18th century was an important moment in the development of European society and culture.

This programme will attempt to recreate the symbolic universe of this period by studying four main issues: enlightenment, man and nature, opinion and liberty.

R Mortier (Chairman) *Belgium*

P-E Knabe (Vice-Chairman) *Germany*

R Darnton *United States*

J Ehrard *France*

W Th M Frijhoff *The Netherlands*

N Hampson *United Kingdom*

C Iglesias Cano *Spain*

F Moureau *France*

J Pedersen *Denmark*

G von Proschwitz *Sweden*

D Roche *France*

C Salomon-Bayet *France*

J Starobinski *Switzerland*

T Winther *Norway*

ESF Scientific Secretary: G Darmon

ESF Contacts: C Heiné/J Freshwater

Tel: (33) 88 76 71 21

Email: cheine@esf.org

The Evolution of Chemistry in Europe 1789-1939 (HIOC)

1993-1996

10 contributing organisations

At the end of the 18th century, chemistry moved from being an 'alchemist's art' to a fully-fledged science. This programme is studying three main themes in the historical development of chemistry: the role and importance of Lavoisier's nomenclature; the change in the academic and social status of the chemist; and the contribution that chemistry has made to public health and welfare.

C Meinel (Chairman) *Germany*

F Abbri *Italy*

R G W Anderson *United Kingdom*

B Bensaude-Vincent *France*

F Caron *France*

N Dazzi *Italy*

D M X Donnelly *Ireland*

T Frängsmyr *Sweden*

A L Janeira *Portugal*

H Kragh *Denmark*

D Knight *United Kingdom*

J Ordóñez *Spain*

R Roulet *Switzerland*

I Stengers *Belgium*

ESF Scientific Secretary: G Darmon

ESF Contacts: C Heiné/J Freshwater

Tel: (33) 88 76 71 21

Email: cheine@esf.org

Individual and Society in the Mediterranean Muslim World (IMW)

1996-1999

13 contributing organisations

The objective of this European programme is to seek to define the relationship between the individual and society in such a way as to understand, for each period of Islamic history, the organisation of interdependent relationships, the position attributed to the individual, and the creation of a hierarchy of the values which rule society.

R Ilbert (Chairman) *France*

A Avanzini *Italy*

C J Bürgel *Switzerland*

G Calasso *Italy*

M H Cherif *Tunisia*

F Dassetto *Belgium*

J H R Davis *United Kingdom*

L Tarazi Fawaz *United States*

O Grabar *United States*

U Haarmann *Germany*

J Hjärpe *Sweden*

R Kruk *The Netherlands*

M Marin *Spain*

T Melasuo *Finland*

G Mirdal *Denmark*

K S Vikor *Norway*

Observer:

A Kazancigil *France*

ESF Scientific Secretary: G Darmon

ESF Contacts: C Heiné/J Freshwater

Tel: (33) 88 76 71 21

Email: cheine@esf.org

The Transformation of the Roman World (TRW)

1993-1997

16 contributing organisations

This programme is shedding light on the social and cultural transitions that are currently affecting Europe by studying the ancient Roman world during its period of transformation.

J Arce (Co-ordinator) *Spain*

E Chrysos (Co-ordinator) *Greece*

I Wood (Co-ordinator) *United Kingdom*

G Akerström-Hougen *Sweden*

M Barcelo *Spain*

V Bierbrauer *Germany*

G-P Brogiolo *Italy*

* (also affiliated SCSS)

A Dierkens *Belgium*
 N Hannestad *Denmark*
 R Hodges *United Kingdom*
 Z Kobylinski *Poland*
 M Mazza *Italy*
 M Mostert *The Netherlands*
 P Périn *France*
 W Pohl *Austria*
 H H van Regteren Altena *The Netherlands*
 H G Resi *Norway*
 L Cracco Ruggini *Italy*
 F Theuws *The Netherlands*
 ESF Scientific Secretary: M Sparreboom
 (until Sept 95) / V Lepistö-Kirsiä
 ESF Contact: G Schauinger
 Tel: (33) 88 76 71 26
 Email: humanities@esf.org

Social sciences

European Management and Organisations in Transition (EMOT)

1993-1996

11 contributing organisations

EMOT is looking at the different types of economic organisation within Europe and how these are changing, as well as interregional and international integration of organisations as firms respond to the new climate of internationalism within Eastern and Western Europe.

A Grandori (Co-Chairman) *Italy*
 R Whitley (Co-Chairman) *United Kingdom*
 M Mundell (Research Co-ordinator) *Italy*
 J L Alvarez *Spain*
 T Colbjørnsen *Norway*
 L Engwall *Sweden*
 H Gahmberg *Finland*
 A Kieser *Germany*
 P E Mouritzen *Denmark*
 G A van der Knaap *The Netherlands*
 A Wassenberg *The Netherlands*
 ESF Scientific Secretary: G Darmon
 ESF Contacts: C Heiné/J Freshwater
 Tel: (33) 88 76 71 21
 Email: cheine@esf.org

Geographic Information Systems: Data Integration and Data Base Design (GISDATA)

1993-1996

15 contributing organisations

Building on national research efforts, GISDATA's aim is to promote collaborative ventures that will help researchers overcome the limitations of integrating pan-European spatial data as well as design pan-European databases and environmental and social applications that can be used across Europe.

I Masser (Co-Director) *United Kingdom*
 F Salgé (Co-Director) *France*
 A M Arnaud *Portugal*
 H-P Bähr *Germany*
 K Brassel *Switzerland*
 M Craglia (Research Co-ordinator) *United Kingdom*
 J-P Donnay *Belgium*
 M Fischer *Austria*
 M Goodchild *United States of America*
 E Holm *Sweden*
 P Mogorovich *Italy*
 N D Polydorides *Greece*
 H J Scholten *The Netherlands*
 E M Sorensen *Denmark*
 G H Strand *Norway*
 A Susanna *Italy*
 ESF Scientific Secretary: J H Smith
 ESF Contact: C Mabrouk
 Tel: (33) 88 76 71 31
 Email: scss@esf.org

Learning in Humans and Machines (LHM)

1994-1997

9 contributing organisations

Drawing on psychology, computer science, educational research and sociology, this programme's objective is to create a new discipline in order to help us understand learning processes. Later, the programme hopes to integrate elements of neuroscience and neurocomputing.

H Spada (Chairman) *Germany*
 L Saiitta (Co-Chair) *Italy*
 R Piola (Research Co-ordinator) *Italy*
 P Reimann (Research Co-ordinator) *Germany*
 P Dillenbourg *Switzerland*
 P Light *United Kingdom*

P Mendelsohn *Switzerland*
 G Mirdal *Denmark*
 A Öhman *Sweden*
 T M O'Shea *United Kingdom*
 R Raivola *Finland*
 M van Someren *The Netherlands*
 G Vignaux *France*
 ESF Scientific Secretary: G Darmon
 ESF Contacts: C Heiné/J Freshwater
 Tel: (33) 88 76 71 21
 Email: cheine@esf.org

Tackling Environmental Resource Management (TERM)

1995-1997

14 contributing organisations

TERM will provide a forum where social science researchers involved in environmental studies at a national level can pool and share their expertise to tackle European-wide issues. The programme will also build up a comprehensive inventory of social science research in this field, enabling scientists to identify prospective partners and build on their current achievements.

Bert van der Knaap (Chairman) *The Netherlands*
 F Chiarello *Italy*
 R del Ciello *Italy*
 D Frey *Germany*
 O Godard *France*
 R Hoppe *The Netherlands*
 M Redclift *United Kingdom*
 J Skea *United Kingdom*
 M Skou Anderson *Denmark*
 H Spada *Germany*

Observer:

Andrew Sors *European Commission*
 ESF Scientific Secretary: J H Smith
 ESF Contact: P Koutstaal
 Tel: (33) 88 76 71 42
 Email: pkoutstaal@esf.org

Scientific programmes at a glance

Physical and engineering sciences

Programmes	Duration	Supported for whole or part of duration by Member Organisations from:	Affiliation*
Chemistry of Metals in Biological Systems (METBIO)	1991-1997	B, CH, D, DK, E, I, N, NL, P, S, UK	PESC/LESC
Control of Complex Systems (COSY)	1995-1999	B, CH, D, DK, E, FIN, NL, P, PL, S, TR, UK	PESC
Dynamics of Gas-Surface Interactions (DYNGS)	1991-1995	B, CH, D, DK, E, I, N, NL, P, S, UK	PESC
Kinetic Processes in Minerals and Ceramics (MINC)	1992-1996	B, CH, D, E, F, FIN, I, N, P, UK	PESC
Mathematical Treatment of Free Boundary Problems (FBP)	1993-1997	B, CH, D, DK, E, F, FIN, I, N, NL, P, PL, S, UK	PESC
Process Integration in Biochemical Engineering (PIBE)	1992-1997	B, CH, D, DK, F, FIN, I, IRL, N, NL, P, S, UK	PESC/LESC
Relativistic Effects in Heavy Element Chemistry and Physics (REHE)	1993-1997	D, DK, F, FIN, I, N, NL, PL, S, UK	PESC
Vapour-phase Synthesis and Processing of Nano-particle Materials (NANO)	1995-1999	B, CH, D, DK, FIN, NL, P, S, UK	PESC

Life and environmental sciences

Programmes	Duration	Supported for whole or part of duration by Member Organisations from:	Affiliation*
Airborne Polar Experiment (APE)	1995-1999	CH, D, I, S	LESC
Artificial Biosensing Interfaces (ABI)	1994-1998	B, CH, D, E, F, FIN, I, S	LESC/PESC
Biophysics of Photosynthesis (PHOT)	1993-1997	B, D, DK, E, F, FIN, H, I, N, NL, S, UK	LESC/PESC
Database of Quaternary Mammals of Europe (DATA)	1994-1996	D, F, FIN, S	LESC
European Consortium for Ocean Drilling (ECOD)	1986-1998	B, CH, DK, E, FIN, I, IS, N, NL, S, TR	LESC
European Ice Sheet Modelling Initiative (EISMINT)	1993-1997	B, CH, D, DK, F, I, IS, NL, S, UK	LESC
European Lake Drilling Project (ELDP)	1996-2000	B, CH, F, D, I, N, PL, S	LESC
European Project for Ice Coring in Antarctica (EPICA)	1996-2000	B, CH, D, DK, F, I, N, NL, S, UK	LESC
European Volcanology Project (EVOP)	1992-1996	D, E, F, GR, I, IS, P	LESC
Europrobe	1992-1998	A, B, CH, D, DK, E, F, FIN, IRL, I, N, NL, P, S, UK	LESC
Population Biology (POBI)	1994-1998	B, CH, D, DK, F, FIN, NL, S, UK	LESC
Quaternary Environment of the Eurasian North (QUEEN)	1996-2000	CH, DK, FIN, D, N, S, UK	LESC
Transport Processes in the Atmosphere and the Ocean (TAO)	1996-1999	CH, D, DK, F, I, P, S, UK	LESC
Tropical Canopy Research (TCR)	1994-1998	A, D, DK, I, NL	LESC
Concluded:			
Greenland Icecore Project	1989-1995		
European Palaeoclimate and Man	1989-1995		
Polar North Atlantic Margins	1989-1995		

Medical sciences

Programmes	Duration	Supported for whole or part of duration by Member Organisations from:	Affiliation*
Developmental Biology (EDB)	1992-1996	B, CH, D, DK, F, FIN, I, N, NL, S, UK	EMRC/LESC
European Neuroscience Programme (ENP)	1992-1996	A, B, CH, D, DK, E, F, FIN, GR, I, IRL, N, NL, P, S, UK	EMRC
Programme of Fellowships In Toxicology and Environmental Toxicology (PFT)	1992-1996	B, CH, D, DK, E, F, FIN, GR, I, IRL, N, P, S, UK	EMRC/LESC
Molecular Neurobiology of Mental Illness (MNMI)	1990-1996	A, B, CH, D, DK, F, FIN, GR, IRL, N, NL, P, S, UK	EMRC

Humanities

Programmes	Duration	Supported for whole or part of duration by Member Organisations from:	Affiliation*
Asian Studies	1995-1997	A, B, CH, D, DK, F, FIN, N, NL, S, UK	SCH/SCSS
Concepts and Symbols of the 18th Century in Europe (CSE)	1994-1997	B, CH, D, DK, F, FIN, I, N, NL, S, UK	SCH
The Evolution of Chemistry in Europe 1789-1939 (HIOC)	1993-1996	B, CH, D, DK, F, FIN, I, IRL, NL, S	SCH
Individual and Society in the Mediterranean Muslim World (IMW)	1996-1999	B, CH, D, DK, E, F, FIN, N, NL, S, TR, UK	SCH
The Transformation of the Roman World (TRW)	1993-1997	A, B, CH, D, DK, E, FIN, GR, I, IRL, N, NL, PL, S, UK	SCH

Social sciences

Programmes	Duration	Supported for whole or part of duration by Member Organisations from:	Affiliation*
European Management and Organisations in Transition (EMOT)	1993-1996	CH, D, DK, F, FIN, I, IRL, N, NL, S, UK	SCSS
Geographic Information Systems: Data Integration and Data Base Design (GISDATA)	1993-1996	A, B, CH, D, DK, F, GR, I, IRL, N, NL, P, S, UK	SCSS
Learning in Humans and Machines (LHM)	1994-1997	B, CH, D, DK, F, FIN, NL, S, UK	SCSS
Tackling Environmental Resource Management (TERM)	1995-1997	B, CH, D, DK, E, F, FIN, I, N, NL, S, UK	SCSS

* Transdisciplinary programmes are listed here under the principal disciplinary area

Scientific networks

ESF networks bring together scientists to explore the potential of developing and carrying out research at a European level. Usually relatively short-term, networks will often lead to proposals for research programmes. The following pages give details of the scientific networks and their co-ordination committees being supported by the ESF in 1995 and of the new networks commissioned during the year.

Physical and engineering sciences

Catalytic Membrane Reactors

1994-1997

Coordinating high quality European research into the integrated use of membrane separators as catalysts in chemical processes, this network is concentrating on fundamental scientific aspects of membrane design, theoretical analysis and modelling.

E Drioli (Chairman) *Italy*
R-D Behling *Germany*
R Bredezen *Norway*
L Cot *France*
J-A Dalmon *France*
R Hughes *United Kingdom*
M Morbidelli *Italy*
H Strathmann *The Netherlands*
K I Zamarev *Russia*

ESF Scientific Secretary: **H U Karow**
 ESF Contact: **C Werner**
 Tel: (33) 88 76 71 28
 Email: cwerner@esf.org

Converging Computing Methodologies in Astronomy

1995-1997

A group of computer scientists working in support of astronomical observations aim to bring together European work in data handling and image improvement aspects of computing in astronomy.

M C Maccarone (Chairman) *Italy*
F Murtagh (Scientific Secretary) *Germany*
A Bijaoui *France*
V di Gesu *Italy*
A Heck *France*
M J Kurtz *United States*
P Linde *Sweden*
R Molina *Spain*
E Raimond *The Netherlands*
 ESF Scientific Secretary: **H U Karow**
 ESF Contact: **M Clifford**
 Tel: (33) 88 76 71 07
 Email: pesc@esf.org

Electroluminescence in Silicon

1995-1997

Silicon is already widely used throughout the information and communication industries, but its optical performance is poor. The use of a porous form of silicon has achieved significant enhancement, and this network aims to build on these developments at a European level.

B Hamilton (Chairman) *United Kingdom*
A Andrianov *Russia*
R Herino *France*
J Kelly *The Netherlands*
W Lang *Germany*
J McGilp *Ireland*
S Ossicini *Italy*

ESF Scientific Secretary: **H U Karow**
 ESF Contact: **P Cosgrove**
 Tel: (33) 88 76 71 06
 Email: pcosgrove@esf.org

Highly Structured Stochastic Systems

1993-1995

Stochastic modelling techniques build complex probabilistic structures benefiting studies in genetics, genetic epidemiology, social science models, population studies, legal reasoning, image analysis and other subjects. This network enables European researchers to cooperate.

P J Green (Chairman) *United Kingdom*
A J Baddeley *The Netherlands*
A Frigessi *Italy*
A E Gelfand *United States of America*
S Lauritzen *United Kingdom*
A O'Hagan *United Kingdom*
A Racine-Poon *Switzerland*
S Richardson *France*
D J Spiegelhalter *United Kingdom*
N Wermuth *Germany*
ESF Scientific Secretary: H U Karow
ESF Contact: C Werner
Tel: (33) 88 76 71 28
Email: cwerner@esf.org

Metal Clusters

1992-1995

Metal clusters occupy a central role in chemistry, but the study of compounds where interactions between metal atoms is important also interests physicists, biologists and theoreticians. Aspects are chemical bonding problems, cooperative phenomena, structure determinations, physical effects, and chemical properties.

P Braunstein (Chairman) *France*
J O Bovin *Sweden*
D Fenske *Germany*
Lord Lewis *United Kingdom*
G Longoni *Italy*
D M P Mingos *United Kingdom*
I A Oro *Spain*
A Simon *Germany*
K Vrieze *The Netherlands*

ESF Scientific Secretary: H U Karow
ESF Contact: C Werner
Tel: (33) 88 76 71 28
Email: cwerner@esf.org

Oxide Crystals

1994-1997

Technical advances have been made in semiconductors, optical fibre communication and solid state lasers. Progress in the controlled production of insulating crystals has had less impact. This network enables the exchange of information and expertise on basic growth processing of a range of oxides with interesting scientific and commercial applications.

G Corradi (Chairman) *Hungary*
M Wöhlecke (Secretary) *Germany*
F Agulló-López *Spain*
R Capelletti *Italy*
B Jannot *France*
D Schoemaker *Belgium*
J C Soares *Portugal*
P D Townsend *United Kingdom*
ESF Scientific Secretary: H U Karow
ESF Contact: C Werner
Tel: (33) 88 76 71 28
Email: cwerner@esf.org

Quantum Fluids and Solids

1992-1995

Recent European discoveries in low temperature physics have stimulated the study of simple fluids in which quantum mechanical effects are dominant. The Network's workshops enable researchers in many laboratories, East and West, to achieve fruitful collaboration.

H E Hall (Chairman) *United Kingdom*
S Balibar *France*
A S Borovik-Romanov *Russia*
G Frossati *The Netherlands*
M Krusius *Finland*
F Pobell *Germany*
F B Rasmussen *Denmark*
L Reatto *Italy*

ESF Scientific Secretary: H U Karow
ESF Contact: C Werner
Tel: (33) 88 76 71 28
Email: cwerner@esf.org

Life and environmental sciences

European-African Songbird Migration

1993-1996

This network creates a coherent European project to study songbirds migrating from Northern Europe to Western Africa. Research centres in 17 European countries have agreed to focus their research on a selected list of 'key species' and to use standardised methods in order to gain substantial insight into migratory strategies of songbirds.

F Bairlein (Chairman) *Germany*
P Berthold *Germany*
J Calderón *Spain*
A Hedenström *Sweden*
L Jenni *Switzerland*
A van Noordwijk *The Netherlands*
W Peach *United Kingdom*
S Rumsey *United Kingdom*
F Spina *Italy*

ESF Scientific Secretary: N Petersen (until Aug 95) / A Wiklund
ESF Contacts: C Heiné/J Freshwater
Tel: (33) 88 76 71 21
Email: cheine@esf.org

Fishes of the Antarctic Ocean

1994-1996

In the study of Antarctic fish, a wealth of aspects are relevant to the understanding of the evolution and function of physiological, biochemical and ecological adaptations to their extreme living conditions.

G di Prisco (Co-Chairman) *Italy*
A Clarke (Co-Chairman) *United Kingdom*
E Pisano (Secretary) *Italy*
S E Fevolden *Norway*
C Gerday *Belgium*
G Hubold *Germany*
J-C Hureau *France*
A Neyelov *Russia*
K Skora *Poland*
R E Weber *Denmark*

ESF Scientific Secretary: N Petersen (until Aug 95) / A Wiklund
ESF Contacts: C Heiné/J Freshwater
Tel: (33) 88 76 71 21
Email: cheine@esf.org

Hominoid Evolution and Environmental Change in the Neogene of Europe

1995-1998

The Network is focusing on the evolution of the Neogene European mammalian sequences containing hominoids, with special attention to the upper Neogene, when the most significant environmental and climatic changes took place.

J Agusti (Chairman) *Spain*

M Fortelius *Finland*

P Andrews *United Kingdom*

L de Bonis *France*

J L Franzen *Germany*

L Kordos *Hungary*

D Pilbeam *United States*

L Rook *Italy*

N J Shackleton *United Kingdom*

ESF Scientific Secretary: A Wiklund

ESF Contacts: C Heiné/J Freshwater

Tel: (33) 88 76 71 21

Email: cheine@esf.org

Impact Cratering and Evolution of the Earth

1993-1995

Hypervelocity impacts of extraterrestrial bodies were and are important processes for the evolution of planet Earth. This network encourages comprehensive interdisciplinary research in this area in Europe, leading to the development of a modern global geology.

D Stöffler (Chairman) *Germany*

Ch Koeberl (Secretary) *Austria*

J H Doukhan *France*

P Farinella *Italy*

M Lindström *Sweden*

A Montanari *Italy*

L Pesonen *Finland*

U Schärer *France*

J Smit (Editor, Newsletter) *The Netherlands*

Observers

R A F Grieve *Canada*

V L Masaitis *Russia*

H J Melosh *United States of America*

ESF Scientific Secretary: P Colyer

ESF Contact: I May

Tel: (33) 88 76 71 17

Email: imay@esf.org

Systematic Biology

1994-1997

Issues of biodiversity and taxonomy are of current scientific importance, and scientific work in these fields are being linked in a coherent European initiative which also provides a platform for coordination with similar activities in North America.

S Blackmore (Chairman) *United Kingdom*

N Donlon (Secretary) *United Kingdom*

P Alberch *Spain*

K Bremer *Sweden*

W Los *The Netherlands*

C Nauman *Germany*

B Øllgaard *Denmark*

G Pinna *Italy*

S Tillier *France*

P Trojan *Poland*

M Türkay *Germany*

M Vincx *Belgium*

R Wehner *Switzerland*

Observers

J Busby *Australia*

R Gamez *Costa Rica*

D V Geltman *Russia*

P Raven *USA*

S Wirjoatmodjo *Indonesia*

ESF Scientific Secretary: N Petersen

(until Aug 95) / A Wiklund

ESF Contacts: C Heiné/J Freshwater

Tel: (33) 88 76 71 21

Email: cheine@esf.org

Whole Plant Physiology

1992-1995

The aim has been to strengthen integrative approaches to the study of whole plant physiology, with ecological emphasis in order to improve prediction of the impact of global changes in climate and atmospheric composition on crops and natural ecosystems, and crop selection.

H Lambers (Chairman) *The Netherlands*

E Garnier (Secretary) *France*

C Körner *Switzerland*

C-M Larsson *Sweden*

D Lawlor *United Kingdom*

J Merino *Spain*

J S Pereira *Portugal*

J Roy *France*

E-D Schulze *Germany*

ESF Scientific Secretary: N Petersen

(until Aug 95) / A Wiklund

ESP Contact: P Cosgrove

Tel: (33) 88 76 71 06

Email: pcosgrove@esf.org

Medical sciences

Cell Stress Genes and their Protein Products

1994-1996

Studies of cell stress genes and their protein products cover phenomena from bacteria to man. Many disparate subjects, including autoimmunity and neurodegenerative diseases are topics of this network.

R J Mayer (Co-Chairman) *United Kingdom*

B Maresca (Co-Chairman) *Italy*

P M Kloetzel (Secretary) *Germany*

P Arrigo *France*

O Bensaude *France*

C Georgopoulos *Switzerland*

K Hendil *Denmark*

A Leone *Italy*

C Rodrigues-Pousada *Portugal*

G Santoro *Italy*

ESF Scientific Secretary: J-H Kock

(until Dec 95) / I Wünnig

ESF Contact: B Schaller

Tel: (33) 88 76 71 18

Email: bschaller@esf.org

Molecular Biology and Ecology of Plasmid-mediated Gene Spread

1994-1997

This network focuses on the role of bacterial plasmids in the process of genetic exchange and distribution. It unites molecular biologists and microbial ecologists, groups which have previously worked together too seldom.

M Espinosa (Chairman) *Spain*

E M Wellington (Deputy Chairman)

United Kingdom

C M Thomas (Secretary) *United Kingdom*

M Couturier *Belgium*

S Molin *Denmark*

E Lanka *Germany*

P J J Hooykaas *The Netherlands*

J D Van Elsas *The Netherlands*

ESF Scientific Secretary: J-H Kock

(until Dec 95) / I Wünnig

ESF Contact: C Durant

Tel: (33) 88 76 71 27

Email: cdurant@esf.org

HLA and Allergy

1992-1996

Human immune response has been studied from immunological disorders. Recombinant DNA technology has made possible the study of allergic response at the cellular and molecular level. This network enables European laboratories to coordinate research into the role of HLA - Human Leukocyte Antigen - genes in the control of human response to allergens.

M Ricci (Chairman) *Italy*
A Ruffilli (Scientific Secretary) *Italy*
D Charron *France*
M L Kapsenberg *The Netherlands*
D Kraft *Austria*
J Kuehr *Germany*
H Lowenstein *Denmark*
E Möller (to July 95) *Sweden*
R E O'Hehir *United Kingdom*
G Peltre *France*
A Sveigaard *Denmark*
ESF Scientific Secretary: J-H Kock (until Dec 95) / I Wüning
ESF Contact: B Schaller
Tel: (33) 88 76 71 18
Email: bschaller@esf.org

Databases of Gene Expression during Mammalian Development

1993-1996

With the application of the techniques of molecular genetics there has been an explosion of data on the relationship between gene expression and the development of mammalian embryos. Together with centres in Greece, Germany, France, Finland and the Netherlands, the MRC Human Genetics Unit (UK) is developing an interactive textual and graphic database.

D Davidson (Chairman) *United Kingdom*
J Bard (Secretary) *United Kingdom*
F Afrati *Greece*
R Baldock *United Kingdom*
E Boncinelli *Italy*
B Foehring *Germany*
M Gulisano *Italy*
M H Kaufman *United Kingdom*
T Kavalieros *Greece*
W Lammer *The Netherlands*
K Lawson *The Netherlands*

M Mark *France*
G Muller *Austria*
T Pexieder *Switzerland*
P Rigby *United Kingdom*
K Schughart *Germany*
J Streicher *Austria*
I Thesleff *Finland*
F Verbeek *The Netherlands*
J L Vonesch *France*
D Wilkinson *United Kingdom*
ESF Scientific Secretary: J-H Kock (until Dec 95) / I Wüning
ESF Contact: B Schaller
Tel: (33) 88 76 71 18
Email: bschaller@esf.org

Humanities

The Convergence and Divergence of Dialects in a Changing Europe

1996-1998

This network has been established to bring together linguists who study the dynamics of dialect convergence and divergence. All over Europe, social and cultural changes affecting the nature and position of the old dialects occur at increasing speed. The fact that, at present, processes of convergence and divergence appear to be taking place throughout the old world offers unique possibilities for relevant cross-linguistic research.

P Auer (Co-Chairman) *Germany*
F Hinskens (Co-Chairman) *The Netherlands*
W Dressler *Austria*
W Haas *Switzerland*
A Hagen *The Netherlands*
J Kallen *Ireland*
P Kerswill *United Kingdom*
K Mattheier *Germany*
I Pedersen *Denmark*
A Sobrero *Italy*
J Taldeman *Belgium*
M Thelander *Sweden*
J Villena *Spain*
ESF Scientific Secretary: V Lepistö-Kirsiä
ESF Contact: C Durant
Tel: (33) 88 76 71 27
Email: cdurant@esf.org

Nationalist Socialist Occupation Policy

1994-1997

This network examines aspects of the National Socialist Occupation Policy during the Second World War from a historical point of view, benefiting from the large volume of contemporary documents which have recently become available.

W Benz (Chairman) *Germany*
J Th M Bank (Secretary) *The Netherlands*
F Bédarida *France*
W Dlugoborski *Poland*
H Fleischer *Greece*
H Graml *Germany*
R Hilberg *United States*
G Otto *Germany*
R J Overy *United Kingdom*
P Sipos *Hungary*
J H Ten Cate *The Netherlands*
A Trommer *Denmark*
E Weinzierl *Austria*
ESF Scientific Secretary: M Sparreboom (until Sept 95) / V Lepistö-Kirsiä
ESF Contact: G Schavinger
Tel: (33) 88 76 71 26
Email: humanities@esf.org

Palaeolithic Occupation of Europe

1992-1995

Knowledge of the Pleistocene occupation history of Europe has been increased by recently developed dating techniques. European archaeological sites have been studied separately by scientists in several disciplines and countries. This network enables the results to be coordinated and published.

G Bosinski (Chairman) *Germany*
W Roebroeks (Secretary) *The Netherlands*
C Farizy *France*
C Gamble *United Kingdom*
L Larsson *Sweden*
M Mussi *Italy*
N D Praslov *Russia*
L Raposo *Portugal*
M Santonja *Spain*
A Tuffreau *France*
ESF Scientific Secretary: M Sparreboom (until Sept 95) / V Lepistö-Kirsiä
ESF Contact: G Schavinger
Tel: (33) 88 76 71 26
Email: humanities@esf.org

Republicanism: A Shared European Heritage

1995-1998

This network explores the riches of a specifically European republican theory beyond the Renaissance in Britain and on the continent. One aspect will be the relevance of the ideal of republican liberty for contemporary debate within the new Europe.

Q Skinner (Chairman) *United Kingdom*
M van Gelderen (Secretary) *United Kingdom*
C Larrère *France*
H-E Bödecker *Germany*
I Comparato *Italy*
I Hampsher-Monk *United Kingdom*
ESF Scientific Secretary: M Sparreboom
 (until Sept 95) / **V Lepistö-Kirsilä**
ESF Contact: C Durant
Tel: (33) 88 76 71 27
Email: cdurant@esf.org

Social sciences

Gender Inequality and the European Regions

1994-1997

Concerned with the advantages and disadvantages arising from differing conceptions across Europe of the social roles of men and women, the network attempts to move towards a complex multidimensional analysis of gender divisions, in, for example, labour markets, household structures and taxation systems.

S Duncan (Chairman) *United Kingdom*
B Pfau-Effinger (Secretary) *Germany*
E Aufhauser *Austria*
L Gonäs *Sweden*
N Kyriazis *Greece*
D Perrons *United Kingdom*
M Solsona *Spain*
S Walby *United Kingdom*
ESF Scientific Secretary: J H Smith
ESF Contact: P Cosgrove
Tel: (33) 88 76 71 06
Email: pcosgrove@esf.org

Political-Economic Dimensions of Enlargement and New Membership of the European Union

1996-1998

This network aims to contribute to the literature in economics and political science by focusing on the role of institutions in political decision making.

B Steunenberg (Chairman) *The Netherlands*
J Bacaria *Spain*
S Berg *Sweden*
P Dunleavy *United Kingdom*
D da Empoli *Italy*
B S Frey *Switzerland*
A Inotai *Hungary*
J-E Lane *Norway*
D Schmidtchen *Germany*
F Schneider *Austria*
H Weck-Hannemann *Austria*
ESF Scientific Secretary: J H Smith
ESF Contact: C Mabrouk
Tel: (33) 88 76 71 31
Email: scss@esf.org

Social Transformations in Central and Eastern Europe

1994-1997

This joint Polish-French initiated network examines the theoretical basis and structural consequences of the rapid social changes occurring in Central and Eastern Europe, from sociological, political science and economic viewpoints.

W Adamski (Co-Chairman) *Poland*
M Dobry (Co-Chairman) *France*
M Baethge *Germany*
B Greskovits *Hungary*
M Illner *Czech Republic*
D Lane *United Kingdom*
M Morlino *Italy*
I Papadopoulos *Greece*
H van der Wusten *The Netherlands*
ESF Scientific Secretary: J H Smith
ESF Contact: C Mabrouk
Tel: (33) 88 76 71 31
Email: scss@esf.org

Transitions in Youth

1993-1996

The main focus in studying the transitions of young people as they progress towards adulthood is on the transition from education to the labour market.

Other transitions may be new family status or independent households. The network is a catalyst stimulating comparative research both in terms of theory and cross-national survey analysis.

D Raffe (Chairman) *United Kingdom*
J Planas (Secretary) *Spain*
R Breen *United Kingdom*
D Hannan *Ireland*
W Müller *Germany*
H Rutjes *The Netherlands*
P Werquin *France*
ESF Scientific Secretary: J H Smith
ESF Contact: P Cosgrove
Tel: (33) 88 76 71 06
Email: pcosgrove@esf.org

Scientific networks at a glance

ESF Scientific Networks are supported by the Basic Budget to which all Member Organisations contribute.

Physical and engineering sciences

Networks	Duration	Affiliation*
Catalytic Membrane Reactors	1994-1997	PESC
Converging Computing Methodologies in Astronomy	1995-1997	PESC
Electroluminescence in Silicon	1995-1997	PESC
Highly Structured Stochastic Systems	1993-1995	PESC
Metal Clusters	1992-1995	PESC
Oxide Crystals	1994-1997	PESC
Quantum Fluids and Solids	1992-1995	PESC

Life and environmental sciences

Networks	Duration	Affiliation*
European-African Songbird Migration	1993-1996	LESC
Fishes of the Antarctic Ocean	1994-1996	LESC
Hominoid Evolution and Environmental Change in the Neogene of Europe	1995-1998	LESC
Systematic Biology	1994-1997	LESC
Concluded:		
Impact Cratering and Evolution of the Earth	1993-1995	LESC
Mediterranean Marine Geosciences	1992-1995	LESC
Concluded:		
Whole Plant Physiology	1992-1995	LESC

Medical sciences

Networks	Duration	Affiliation*
Cell Stress Genes and their Protein Products	1993-1996	EMRC
Molecular Biology and Ecology of Plasmid-mediated Gene Spread	1994-1997	EMRC/LESC
HLA and Allergy	1992-1996	EMRC
Databases of Gene Expression during Mammalian Development	1993-1996	EMRC/LESC

Humanities

Networks	Duration	Affiliation*
The Convergence and Divergence of Dialects in a Changing Europe	1996-1998	SCH
Nationalist Socialist Occupation Policy	1994-1997	SCH
Palaeolithic Occupation of Europe	1992-1995	SCH
Republicanism: A Shared European Heritage	1995-1998	SCH

Social sciences

Networks	Duration	Affiliation*
Gender Inequality and the European Regions	1994-1997	SCSS
Political-Economic Dimensions of Enlargement and New Membership of the European Union	1996-1998	SCSS
Social Transformations in Central and Eastern Europe	1994-1997	SCSS
Transitions in Youth	1993-1996	SCSS

* Transdisciplinary networks are listed here under the principal disciplinary area

European research conferences in 1995

European Research

Conferences

provide a platform

for high-level discussions

of scientific issues,

with opportunities

for younger scientists

to get involved.

Physics

- **Bose-Einstein Condensation**, J T M Walraven (Amsterdam) - Mont S^e Odile (near Strasbourg), France, 16-21 June
- **Fundamental Aspects of Surface Science: Surface Dynamical Phenomena**, G Benedek (Milano) - York, UK, 26-31 August
- **Advanced Quantum Field Theory: Integrability, Conformal Invariance, Topological Field Theory and Applications**, K Osterwalder (Zürich) - La-Londe-les-Maures, France, 2-7 September
- **Fundamental Aspects of Clusters: Cluster Dynamics**, C Bréchnac (Orsay) and L Wöste (Berlin) - Sitges, Spain, 2-7 September
- **Electronic Structure of Solids: Itinerant Magnetism**, B L Gyorffy (Bristol) - Lunteren, The Netherlands, 9-14 September
- **Nuclear Physics: Polarization in Electron Scattering**, C W de Jager (Amsterdam) - Santorini, Greece, 12-17 September
- **Molecular Liquids: Structure and Order in Liquids**, R M Lynden-Bell (Cambridge) - Blankenberge, Belgium, 22-27 September
- **Quantum Optics**, S T Stenholm (Helsinki) - Davos Platz, Switzerland, 23-28 September
- **Very High Resolution Spectroscopy with Photoelectrons: Radicals, Clusters and Excited States**, R J Donovan (Edinburgh) and K Lawley (Edinburgh) - Lenggries, Germany, 23-28 September
- **Dynamical Properties of Solids: Lattice Dynamics in Ill Ordered Systems**, J L Martinez (Madrid) and J M P Mato (Bilbao) - Haro (near Bilbao), Spain, 23-27 September

Chemistry

- **Relativistic Effects in Heavy-Element Chemistry and Physics: Relativistic Quantum Theory of Many-Electron Systems**, I P Grant (Oxford) - Castelvecchio Pascoli, Italy, 30 March-4 April
- **Electrochemistry: Organic Electrochemistry - Interdisciplinary Approaches to Contemporary Problems in the Environment**, F Barba (Madrid) - San Feliu de Guixols, Spain, 19-23 April
- **Chemistry of Metals in Biological Systems**, I Bertini (Florence) - San Miniato, Italy, 22-28 April
- **Stereochemistry**, H Schwarz (Berlin) - Bürgenstock, Switzerland, 30 April-6 May
- **Interfaces and Colloidal Systems**, M Cohen-Stuart (Wageningen) - Giens, France, 9-14 June

Mathematics

- **Mathematical Analysis: Local Singularities of Solutions to Nonlinear and Singular PDEs**, B Ziemian (Warsaw) - San Feliu de Guixols, Spain, 19-24 September

Materials

- **Kinetic Processes in Minerals and Ceramics: Deformation Processes in Minerals, Ceramics and Ionic Crystals**, J C Doukhan (Villeneuve d'Asq) - Blankenberge, Belgium, 24-28 March
- **Plasticity of Materials: Key Issues in Materials Plasticity**, G Saada (Châtillon) - Aghia Pelaghia, Crete, Greece, 6-11 September

Life sciences

- **Plant Cell Biology and Biotechnological Applications: Medicinal Plants - Biology, Chemistry and Drug Development**, L Puglisi (Milano) - Dourdan, France, 14-19 February
- **Control of Metabolic Flux: Metabolic Pathway Engineering in Yeasts**, A J P Brown (Aberdeen) - Granada, Spain, 7-12 April
- **Protein Folding and Stability: Theoretical and Experimental Approaches**, R Jaenicke (Regensburg) and S J Wodak (Bruxelles) - San Feliu de Guixols, Spain, 8-13 April
- **Molecular Basis of Biological Membrane Protein Structure and Function**, I R Booth (Aberdeen) - Seeheim (near Frankfurt), Germany, 8-13 April
- **Molecular Neurobiology: Receptors - Regulation, Function and Signal Transduction**, M Ballivet (Genève) - Acquafredda di Maratea, Italy, 22-27 April
- **NMR in Molecular Biology**, H Kessler (Garching) - Wildbad Kreuth, Germany, 25-30 June
- **Molecular Biology of RNA: Splicing and 3'-processing of Pre-mRNA**, L Wieslander (Stockholm) - Mont S^{te} Odile (near Strasbourg), France, 13-17 September
- **Membrane Dynamics in Endocytosis: Mechanisms and Function**, M C P Marsh (London) - Blarney, Ireland, 14-19 September
- **Biology of Molecular Chaperones: Biological Roles and Action of Molecular Chaperones**, C P Georgopoulos (Genève) - Aghia Pelaghia, Crete, Greece, 14-19 September
- **Biophysics of Cytoskeleton**, J M Andreu (Madrid) - San Feliu de Guixols, Spain, 3-8 October
- **Molecular Biology of Cellular Interactions**, J Gonzalez-Rodriguez (Madrid) - Lenggries, Germany, 9-15 October

Biomedicine & health

- **Coping with Sickness: Health Care - Concepts, Agents, Costs, Controversies**, H Beukers (Leiden) - San Feliu de Guixols, Spain, 2-7 September
- **Aging: Aging of Biological Communication Systems - Nervous, Immune, Endocrine and Vascular Systems**, G Wick (Innsbruck) - Lenggries, Germany, 9-14 September
- **Mechanisms of DNA Repair: Association to Transcription, Replication and Recombination**, E Seeberg (Blindern) - Giens, France, 22-27 September
- **Functional Status Evaluation: Choices and Developments**, B Meyboom-de Jong (Groningen) - Castelvechio Pascoli, Italy, 23-28 September
- **Mechanisms in Toxicity: Understanding Physiology and Diseases**, M Lotti (Padova) - Aghia Pelaghia, Crete, Greece, 29 September-4 October
- **Immunology of Infections: Mucosal Infections**, M Kilian (Aarhus) - Castelvechio Pascoli, Italy, 30 September-5 October
- **B Cells in Normal and Disease State: The Molecular Basis of Human B Cell Disorders**, M Ferrarini (Genova) and F Caligaris Cappio (Torino) - Lunteren, The Netherlands, 14-19 October
- **Inherited Disorders and their Genes in Different European Populations**, P Harper (Cardiff) - San Feliu de Guixols, Spain, 11-16 November
- **Disease Prevention: Scientific Controversies**, R Saracci (Lyon) - Castelvechio Pascoli, Italy, 9-14 December

Geosciences & environment

- **Oceanography: Significance of Coastal Seas in Global Change**, J M Martin (Paris) - Granada, Spain, 22-27 April
- **Space-Time Modelling of Bounded Natural Domains: Intelligent Tools for 3D-Interpolation and Correlation**, H H Voss (Hannover) - Canterbury, United Kingdom, 8-12 September
- **The Ecological Setting of Europe - From the Past to the Future: The Establishment of Plant and Animal Communities in Europe since the Last Glaciation**, B Berglund (Lund) - La Londe Les Maures, France, 7-12 October
- **Ocean Forecasting: Forecasting the Mediterranean**, N Pinardi (Modena) - La Londe les Maures, France, 21-26 October
- **Natural Waters and Water Technology: Modelling of Properties and Processes in Aquatic Systems**, R Wollast (Bruxelles) - Lenggries, Germany, 4-9 November

Social sciences

- **European Transport and Communication Networks: Policies on European Networks**, P Nijkamp (Amsterdam) and K J Button (Loughborough) - Espinho, Portugal, 17-23 April
- **The Political Economy of Economic Policy: The Organisation of Government**, T Persson (Stockholm) - Italy, 6-10 September
- **Future of European Cities: Urban Restructuring in Europe - Citizenship and New Patterns of Social Integration in Wider Europe**, S Garcia (Barcelona) - Acquafredda di Maratea, Italy, 16-21 September

Humanities

- **State and Nation in Modern and Contemporary Europe**, H Hasquin (Bruxelles) - Spa, Belgium, 6-11 October
- **Women in the Christian Tradition**, Mont S^{te} Odile (near Strasbourg), 6-11 October

For a copy of the 1996 Conference programme and application forms, contact the Executive Director:

Dr J Hendekovic,

Tel: (33) 88 76 71 35

Fax: (33) 88 36 69 87

Email: euresco@esf.org

On-line information and application on www server:

http: //www.esf.org/euresco

ESF publications in 1995

The ESF disseminates
information about its activities
through a variety of channels,
including its World Wide Web site
(<http://www.esf.org>)
and a wide range of publications,
from annual reports
to ESF Communications,
the Foundation's biannual
journal. Listed here are
a selection of publications
resulting from ESF activity
in 1995.

Physical and engineering sciences

Committee on Radio Astronomy (CRAF)

Handbook for Radio Astronomy

*Prepared by the Committee on Radio
Astronomy Frequencies (CRAF).*
84 pp. ISBN 2-903148 82 1
Published by ESF, Strasbourg, France, 1995.
Available from the CRAF Clearing House,
Netherlands Foundation for Research
Astronomy, PO Box 2, 7990 AA Dwingeloo,
The Netherlands

Nuclear Physics European Collaboration Committee (NuPECC)

Impact and Applications of Nuclear Science in Europe: Opportunities and Perspectives

*Edited by A van der W, J Åystö, S Galès,
B Jonson and G-E Körner.*
Sponsored by CEC DGXII, December 1994

Life and environmental sciences

Polar Science

Polar North Atlantic Margins - Late Cenozoic Evolution Final Report

36 pp. ISBN 2-903148-83-X
Published by ESF, Strasbourg, France, 1995

Volcanology

The European Laboratory Volcanoes, Workshop Proceedings: Aci Castello (Catania) 18-21 June 1994

Edited by F Barberi, R Casale and M Fratta
388 pp. ISBN 92-827-4985-1
*Published by the Office for Official Publications
of the European Communities, 1995*

European Palaeoclimate

Papers delivered at four workshops
held within this ESF Scientific
Programme (1988-95) have been
published as further Special Issues
of the journal *Paläoklimaforschung*
(Paleoclimate Research).

Evaluation of land surfaces cleared from forests in the Mediterranean region during the time of the Roman empire.

Papers from the 6th EPC Workshop,
Mainz, 14-16 March 1991

Edited by B Frenzel,
Co-editors L Reisch and MM Weiss
170 pp. ISBN 3-437-30773-8,
US-ISBN 1-56081-405-5, ISBN 0930-4673
*Paläoklimaforschung Vol 10, Gustav Fischer
Verlag, Stuttgart, Germany, 1994*

European river activity and climate change during the late glacial and early Holocene

Papers from the 12th EPC Workshop,
Amsterdam, 15-17 October 1992

Edited by B Frenzel,
Co-editors J Vandenberghe, K Kasse,
S Bohncke and B Gläser
228 pp. ISBN 3-437-30806-8,
US-ISBN 1-56081-429-2, ISSN 0930-4673
*Paläoklimaforschung Vol 14, Gustav Fischer
Verlag, Stuttgart, Germany, 1995*

Problems of stable isotopes in Tree-rings, lake sediments and peat-bogs as climate evidence for the Holocene
Papers from the 15th EPC Workshop, Bern, 28-30 April 1993

*Edited by B Frenzel,
Co-editors B Stauffer and M M Weiss*
192 pp. ISBN 3-437-30817-3,
US-ISBN 1-56081-436-5, ISSN 0930-4673
Paläoklimaforschung Vol 15, Gustav Fischer Verlag, Stuttgart, Germany 1995

Solar output and climate during the Holocene
Papers from the 14th EPC Workshop, Bologna, 1-3 April 1993

*Edited by B Frenzel,
Co-editors T Nanni, M Galli and B Gläser*
188 pp. ISBN 3-437-30815-7,
US-ISBN 1-56081-443-0, ISSN 0930-4673
Paläoklimaforschung Vol 16, Gustav Fischer Verlag, Stuttgart, Germany, 1995

Quaternary Mammalian Faunas

Influence of Climate on Faunal Evolution in the Quaternary
Edited by J Agusti and L Werdelin.
ISBN 83-901631-2-8, ISSN 0065-1710

Humanities

The Origins of the Modern State in Europe, 13th - 18th Centuries

Economic Systems and Finance
Edited by R Bonney
652 pp. ISBN 0 19820545 7,
Clarendon Press, Oxford, UK, for ESF, 1995

Network on Code-Switching and Language Contact

One speaker, Two Languages: Cross-disciplinary Perspectives on Code-switching
Edited by L Milroy and P Muysken
378 pp. ISBN 0-521-47350-0 (hardback)
ISBN 0-521-47912-6 (paperback)
Cambridge University Press,
Cambridge, UK, 1995

Network on the History of European Expansion

L'Europe Retrouvée: Les Migrations de la Décolonisation
Edited by J-L Miège and C Dubois
264 pp. ISBN 2 7384 3135 6
Editions l'Harmattan, Paris, France, 1995
(in French)

Social sciences

Economic History of Europe between the Wars

Innovations in the European Economy between the Wars
Edited by F Caron, P Erker, W Fischer.
ISBN 3-11-013582-5, Walter de Gruyter & Co,
Berlin, Germany, 1995

Environment, Science and Society

Environmental Policy in Search of New Instruments
Edited by B Dente
236 pp. ISBN 0 7923 2949 X, Kluwer Academic Publishers, Dordrecht, The Netherlands, 1995

Geographic Information Systems: Data Integration and Data Base Design (GISDATA)

GIS and Generalization: Methodology and Practice
Edited by J-C Müller, J-P Lagrange and R Weibel
260 pp. ISBN 0 7484 0318 3
(paperback: 0 7484 0319 1)
Taylor and Francis Ltd, London, UK, 1995

Beliefs in Government (BiG)

The five books listed below arise from the ESF Programme on Beliefs in Government (Chaired by Professor Max Kaase and Professor Kenneth Newton, 1989-93). The five books were published simultaneously by Oxford University Press in November 1995.

(Vol 1) Citizens and the State
Edited by H-D Klingemann and D Fuchs
498 pp. ISBN 0-19-827955-8
Oxford University Press, 1995

(Vol 2) Public Opinion and Internationalized Governance
Edited by O Niedermayer and R Sinnott
508 pp. ISBN 0-19-827958-2
Oxford University Press, 1995

(Vol 3) The Scope of Government
Edited by O Borre and E Scarbrough
460 pp. ISBN 0-19-827954-X
Oxford University Press, 1995

(Vol 4) The Impact of Values
Edited by J W van Deth and E Scarbrough
608 pp. ISBN 0-19-827957-4
Oxford University Press, 1995

(Vol 5) Beliefs in Government
Edited by M Kaase and K Newton
236 pp. ISBN 0-19-827956-6
Oxford University Press, 1995

Regional and Urban Restructuring in Europe (RURE)

Europe at the Margins: New Mosaics of Inequality
Edited by C Hadjimichalis and D Sadler
260 pp. ISBN 0-471-95635-X
John Wiley & Sons, Chichester, UK, 1995

European Tourism: Regions, Spaces and Restructuring
Edited by A Montanari and AM Williams
294 pp. ISBN 0-471-95286-9
John Wiley & Sons, Chichester, UK, 1995

Towards a New Map of Automobile Manufacturing in Europe? New Production Concepts and Spatial Restructuring
Edited by R Hudson and E W Schamp
288 pp. ISBN 3-540-58812-4
Springer Verlag, Berlin Heidelberg, 1995

The Geography of Advanced Producer Services in Europe
Edited by F Moulaert and F Tödtling.
ISBN 0-08-042631-X,
Elsevier Science Ltd, Oxford, United Kingdom

The Internationalization Process: European Firms in Global Competition
Edited by J-E Nilsson, P Dicken and J Peck
178 pp. ISBN 1-85396-319-4, Paul Chapman Publishing Ltd, Liverpool, UK, 1996

Network on European Communications and Transport Activities Research (NECTAR)

European Transport and Communications Networks: Policy Evolution and Change
Edited by D Banister, R Capello and P Nijkamp
372 pp. ISBN 0-471-95737-2, John Wiley & Sons, Chichester, UK, 1995

European Management and Organisations in Transition (EMOT)

Industrial Transformation in Europe
Edited by E J Dittich, G Schmidt and R Whitley,
290 pp. ISBN 0-8039-7488-4
Sage Publications, 1995

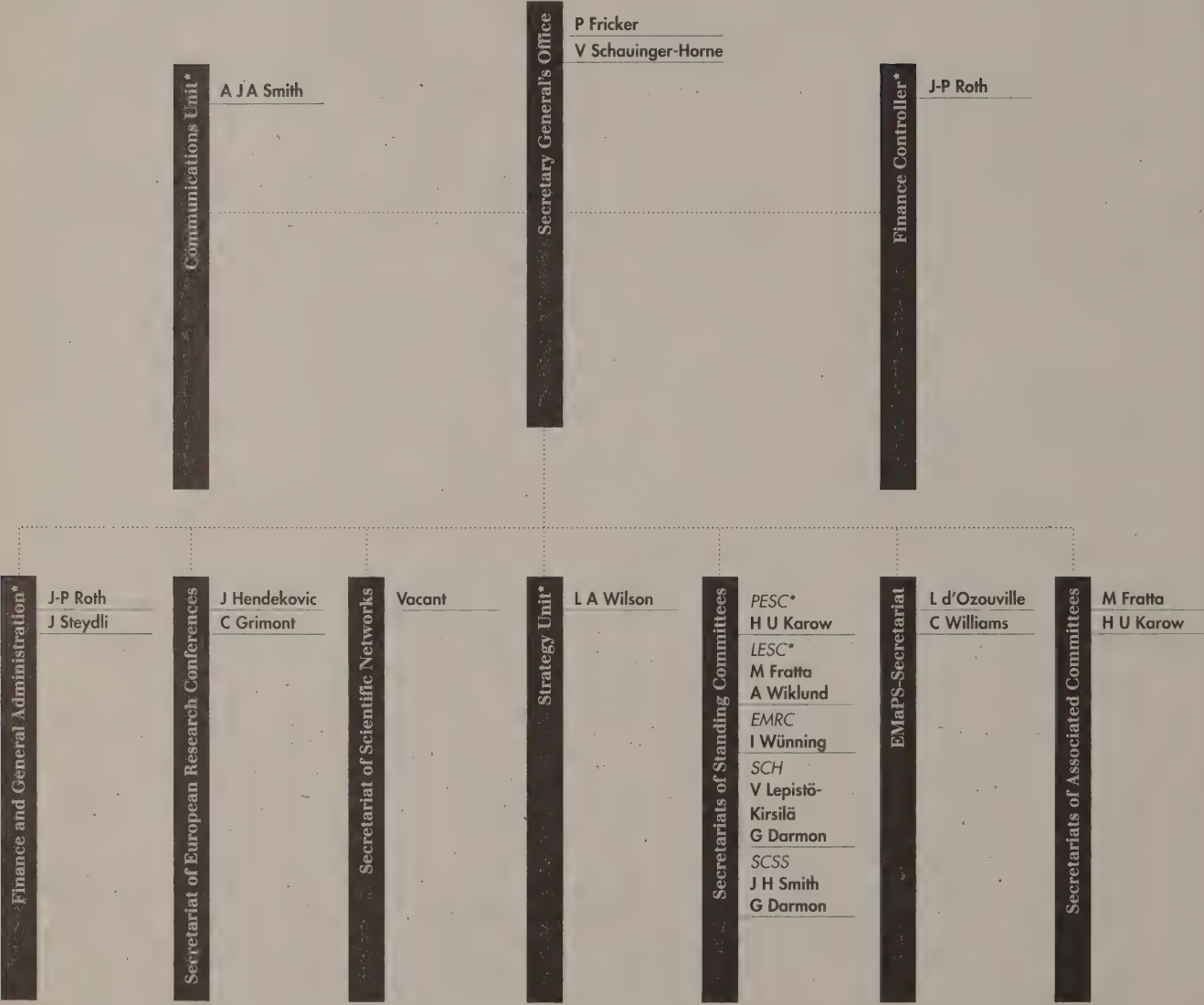
The Changing European Firm, Limits to Convergence
Edited by R Whitley and P Hull Kristensen,
337 pp. ISBN 0-415-12999-0
Routledge, London 1996

Learning in Humans and Machines

Towards an Interdisciplinary Learning Science
Edited by P Reimann and H Spada
325 pp. ISBN 0-08-042569-0
Pergamon, Oxford, 1996

Structure of the ESF office

(senior staff in post as at 1 January 1996)



* Implementation of Strategic Reappraisal

ESF board and committee membership

(as at 1 January 1996)

In 1995, the ESF's Electoral Commission recommended that Professor L Oro (Spain) serve a second three-year term as Vice-President and that Professor G Öquist (Sweden) and Professor Pierre Papon (France) serve as Executive Council representatives on the Board from 1 January 1996.

The Commission also recommended that Professors H Newby (United Kingdom) and R Simili (Italy) serve second three-year terms on the Executive Council and that the following become members of the Executive Council from 1 January 1996: Professor G Björkstrand (Finland), Dr R van Duinen (Netherlands), Professor S Guðbjarnason (Iceland), Dr H Hertig (Switzerland), Professor D Kavlie (Norway), Professor J Martinussen (Denmark), Professor G Öquist (Sweden), Professor N Pak (Turkey), Professor H Rauch (Austria).

Board

D A Rees (President) *United Kingdom*
D M X Donnelly (Vice-President) *Ireland*
W Kröll (Vice-President) *Germany*
L Oro (Vice-President) *Spain*
G Öquist *Sweden*
P Papon *France*
P Fricker (Secretary General)
Secretary: V M Schauinger-Horne

Executive Council

D A Rees (President) *United Kingdom*
D M X Donnelly *Ireland*
W Kröll *Germany*
L Oro *Spain*
G Öquist *Sweden*
P Papon *France*
E L Präestgaard (to Dec 95) *Denmark*
A Aeschlimann (to Dec 95) *Switzerland*
G Björkstrand *Finland*
J Guðbjarnason *Iceland*
B Halász *Hungary*
R B Heap *United Kingdom*
H P Hertig *Switzerland*
D Kavlie *Norway*
K L Komarek (to Dec 95) *Austria*
C Kordon *France*
L Kúznicki *Poland*
J Maggiolly Novais *Portugal*
M Magnússon (to Dec 95) *Iceland*
C Mancini *Italy*
J Martinussen *Denmark*
B Mørland (to Dec 95) *Norway*
B Müller (to Dec 95) *Germany*
H Newby *United Kingdom*
N K Pak *Turkey*
H Pinkster (to Dec 95) *The Netherlands*
E N Protonotarios *Greece*
H Rauch *Austria*
L Simar *Belgium*
R Simili *Italy*
L O Sundelöf (to Dec 95) *Sweden*
A Tanskanen (to Dec 95) *Finland*
R van Duinen *The Netherlands*
H Gg Wagner *Germany*
C Yalçın (to Dec 95) *Turkey*
U Finzi *Representative of the CEC*
Secretary: V M Schauinger-Horne

Electoral Commission (1995)

P Levaux (Chairman) *Belgium*
F R Dias Agudo *Portugal*
P J D Drenth *The Netherlands*
A Eggimann *Switzerland*
E Fiorentino *Italy*
A Harmathy *Hungary*
E Helander *Finland*
K L Komarek *Austria*
J Kornacki *Poland*
G Kuhn *France*
M Magnússon *Iceland*
A E S Mayer *United Kingdom*
B Müller *Germany*
V O'Gorman *Ireland*
B Öhngren *Sweden*
N K Pak *Turkey*
C Pascual *Spain*
I Terp *Denmark*
L Westgaard *Norway*
Representative of NHRF *Greece*

Ad hoc Committee of the Executive Council on Membership

L Oro (Chairman) *ESF Vice-President*
P Fricker *ESF Secretary General*
B Halász *Hungary*
R B Heap *United Kingdom*
K Komarek (to Dec 95) *Austria*
C Kordon *France*
B Müller *Germany*
G Öquist *Sweden*
H Pinkster (to Dec 95) *The Netherlands*
P Colyer (to June 95) *ESF*
L A Wilson (to Dec 95) *ESF*
A Smith *ESF*

Finance Committee

C Pascual (acting Chairman) *Spain*
 A Tanskanen (Chairman to Dec 95) *Finland*
 G Agricola *Italy*
 M Bowthorpe *United Kingdom*
 M Dodet *France*
 E Glück *Austria*
 P Levaux *Belgium*
 B Müller *Germany*
 P Fricker *ESF Secretary General*
 J-P Roth *ESF Finance Officer*

Auditor for financial year 1995

B Werbell *Sweden*

Executive Council Group on New Perspectives for Science in Europe

E L Praestgaard (Chairman) *Denmark*
 M Gibbons *United Kingdom*
 R B Heap *United Kingdom*
 C Kordon *France*
 L A Wilson *ESF*

Standing Committee for Physical and Engineering Sciences (PESC)

J E Fenstad (Chairman) *Norway*
 J-C André (Vice-Chairman) *France*
 M A Barbosa *Portugal*
 S Bevilacqua *Italy*
 P Day *United Kingdom*
 J P Desclaux *France*
 D M X Donnelly *Ireland*
 G Ertl *Germany*
 M S Espedal *Norway*
 G Gleiter *Germany*
 P Goya *Spain*
 A S Hauksdóttir *Iceland*
 A Kluwick *Austria*
 N Kroó *Hungary*
 J Langer *Poland*
 E Larsen *Denmark*
 P Mandel *Belgium*
 P Martinoli *Switzerland*
 N K Pak *Turkey*
 T Pakkanen *Finland*
 K A Pounds *United Kingdom*
 E L Praestgaard (to Dec 95) *ESF Executive Council*
 M Rinaldi *Italy*
 J-E Sundgren *Sweden*
 F W Sluijter *The Netherlands*
 P Swinnerton-Dyer *United Kingdom*
 L Vanquickenborne *Belgium*
ESF Scientific Secretary: H U Karow
ESF Contact: M Clifford
 Tel: (33) 88 76 71 07
 Email: pesc@esf.org

Standing Committee for Life and Environmental Sciences (LESC)

W Rathmayer (Chairman) *Germany*
 C Alzieu *France*
 E Augstein *Germany*
 K Bremer *Sweden*
 G Busuoli *Italy*
 T H Clutton-Brock *United Kingdom*
 M Clynes *Ireland*
 A Coomans *Belgium*
 D J Drewry *United Kingdom*
 R Dyer *United Kingdom*
 T Fagerström *Sweden*
 E Fereres *Spain*
 G Glatzel *Austria*
 R B Heap *ESF Executive Council*
 J Jouzel *France*
 J A Korstgaard *Denmark*
 I Lang *Hungary*
 A E Merbach *Switzerland*
 J-C Mounolou *France*
 J W M Osse *The Netherlands*

I Sa-Correia *Portugal*
 G Salvatore *Italy*
 O Savolainen *Finland*
 F A Seifert *Germany*
 A M C Sengör *Turkey*
 H Thorgeirsson *Iceland*
 A Urbanek *Poland*
 L Walløe *Norway*
 D Weis *Belgium*

ESF Scientific Secretary: M Fratta
ESF Contact: P Pirra
 Tel: (33) 88 76 71 29
 Email: lesc@esf.org

European Medical Research Councils (EMRC)

This Committee consists of *ad hoc* representatives of those ESF Member Organisations which act as Research Councils concerned with medicine and health.

Ph Lazar (Chairman)
ESF Scientific Secretary: J-H Kock
 (until Dec 95) / I Wünnig

EMRC Executive Group

Ph Lazar (Chairman) *France*
 E Dabelsteen *Denmark*
 D Evered *United Kingdom*
 A Hofman *The Netherlands*
 B Konze-Thomas *Germany*
 J Komender *Poland*
 L Peltonen *Finland*
ESF Scientific Secretary: J-H Kock
 (until Dec 95) / I Wünnig
ESF Contact: B Schaller
 Tel: (33) 88 76 71 18
 Email: bschaller@esf.org

Standing Committee for the Humanities (SCH)

W Blockmans (Chairman) *The Netherlands*
 J Arce *Spain*
 D Barjot *France*
 D E D Beales *United Kingdom*
 G Björkstrand *Finland*
 M Böhler *Switzerland*
 I Bondebjerg *Denmark*
 L Droulia *Greece*
 E Fischer-Lichte *Germany*
 M Haman *Poland*
 B Hansson *Sweden*
 J Jarab *Czech Republic*
 D Kosáry *Hungary*
 G MacEoin *Ireland*
 G Oberhammer *Austria*
 M Rindal *Norway*
 M H Rocha-Pereira *Portugal*
 A Verhulst *Belgium*

H L Wesseling *The Netherlands*
S Zoppi *Italy*

Subject Representatives

R Halleux *History of Science*

R Ilbert *Islam Studies*

E König *Linguistics*

Observers

S Hackney *National Endowment*

for the Humanities

R Ris *Conseil International de Philosophie
et des Sciences Humaines*

S Shaked *Israel Academy of Sciences
and Humanities*

R Simili *ESF Executive Council*

*ESF Scientific Secretary: M Sparreboom
(until Sept 95) / V Lepistö-Kirsiä*

ESF Contact: G Schavinger

Tel: (33) 88 76 71 26

Email: humanities@esf.org

Standing Committee for the Social Sciences (SCSS)

G Martinotti (Chairman) *Italy*

R Amann *United Kingdom*

E Baltensperger *Switzerland*

H Brink *Denmark*

M Dalla Costa *Italy*

F Engelstad *Norway*

J Ferreira de Almeida *Portugal*

H Fisek *Turkey*

H Gaus *Belgium*

M Kaase *Germany*

L Kulcsár *Hungary*

M Laver *Ireland*

L Leontidou *Greece*

M Marin *Finland*

H Matis *Austria*

C Meidinger *France*

J R Montero *Spain*

L G Nilsson *Sweden*

L Paganetto *Italy*

Th Thorlindsson *Iceland*

F Thys-Clement *Belgium*

G A van der Knaap *The Netherlands*

A Wyczanski *Poland*

Observers

S N Eisenstadt *Israel Academy of Sciences
and Humanities*

C Maretti *National Science Foundation, USA*

E Mochmann *Adviser, Social Science
Databases*

H Newby *ESF Executive Council*

B Öhngren *COST Technical Committee,
Social Sciences*

K Prewitt *Social Science Research Council,
USA*

ESF Scientific Secretary: J H Smith

ESF Contact: C Mabrouk

Tel: (33) 88 76 71 31

Email: scss@esf.org

European Research Conferences Steering Committee

H Gg Wagner (Chairman) *Germany*

K Bremer *ESF Standing Committee for Life
and Environmental Sciences (LESC)*

E Bayer *European Mathematical Society*

J Biemond *European Association*

for Signal Processing

D M X Donnelly *ESF Vice-President*

N N Greenwood *EUCHEM/Federation
of European Chemical Societies*

H M Keir *European Union of Societies
in Experimental Biology*

A Longinelli *European Union of Geoscientists*

H Mäkelä *ESF European Medical Research
Councils (EMRC)*

P Martinoli *ESF Standing Committee
for the Physical and Engineering Sciences
(PESC)*

K Newton *ESF Standing Committee
for Social Sciences (SCSS)*

R Pick *European Physical Society*

H van der Molen (to May 95) *European
Science Research Councils (ESRC)*

A Verhulst *ESF Standing Committee
for the Humanities (SCH)*

Guests

C Brézin *Philippe Laudat Conferences*

D G Crighton *European Mechanics Society*

A Jacquemin-Sablon

Jacques Monod Conferences

J Rosenbaum *European Commission*

E P Whitehead *European Commission*

ESF Office:

J Hendekovic *Executive Director
of the Programme*

C Grimon *Conference Manager*

Tel: (33) 88 76 71 35

Email: euresco@esf.org

Network Committee

A Committee of the Executive
Council set up to manage
the Network operations,
and to make recommendations
to Council on Network launches.

D M X Donnelly (Chairman) *Ireland*

W P Blockmans *The Netherlands, SCH*

J E Fenstad *Norway, PESC*

B Halász *Hungary*

Ph Lazar *France, EMRC*

G Martinotti *Italy, SCSS*

W Rathmayer *Germany, LESC*

H Gg Wagner *Germany*

Secretary: P Colyer (until Dec 95)

ESF Contact: I May

Tel: (33) 88 76 71 17

Email: networks@esf.org

Network Review Panel

T D Spearman (Chairman) *Ireland*

E Allardt *Finland*

H Ehrhardt *Germany*

I Oro *Spain*

P Papon *France*

H L Wesseling *The Netherlands*

L A Wilson *ESF*

European Boards for Marine and Polar Science (EMaPS-Boards)

EMaPS-Marine Board Members and their Delegates

**Centre National de la Recherche
Scientifique**

D Cadet (Chairman) *France*

**Statens Naturvidenskabelige
Forskningsråd**

K Richardson (Vice-Chairman)
Denmark

Instituto Español de Oceanografía
R Robles (Vice-Chairman) *Spain*

**Fonds National de la Recherche
Scientifique**

M Frankignoulle *Belgium*

**Nationaal Fonds
voor Wetenschappelijk Onderzoek**
M Vincx *Belgium*

Suomen Akatemia / Finlands Akademi
M Leppäranta *Finland*

**Institut Français de Recherche
pour l'Exploitation de la Mer**
P David *France*

Deutsche Forschungsgemeinschaft
G Wefer *Germany*

National Centre for Marine Research
D Papanikolaou *Greece*

Marine Research Institute
O S Astthorsson *Iceland*

Marine Institute
P Heffernan *Ireland*

**Ente per le Nuove Tecnologie,
l'Energia e l'Ambiente**
V Artale *Italy*

Consiglio Nazionale delle Ricerche
S Vallerga *Italy*

**Nederlandse organisatie voor weten-
schappelijk onderzoek /
Koninklijke Nederlandse Akademie
van Wetenschappen**
W G Mook *The Netherlands*

Norges Forskningsråd
U Lie *Norway*

Polska Akademia Nauk
J Dera *Poland*

**Junta Nacional de Investigaçao
Ciêntifica e Tecnológica**

L Saldanha *Portugal*

**Consejo Superior de Investigaciones
Cientificas / Secretaría General
del Plan Nacional de Investigación
Científica y Desarrollo Tecnológico**

J Tintore *Spain*

Naturvetenskapliga forskningsrådet

L Rahm *Sweden*

**Schweizerischer Nationalfonds
zur Förderung der wissenschaftlichen
Forschung**

T Stocker *Switzerland*

Centre for Coastal and Marine Sciences

B L Bayne *United Kingdom*

Southampton Oceanography Centre

J Shepherd *United Kingdom*

ESF Scientific Secretary: L d'Ozouville

ESF Contact: J Swift

Tel: (33) 88 76 71 41

Email: mps@esf.org

**EMaPS-Polar Board
Members and
their Delegates**

British Antarctic Survey

B Heywood (Chairman) *United Kingdom*

**The Commission for Scientific Research
in Greenland**

J P Hart Hansen (Vice-Chairman)

Denmark

**Ente per le Nuove Tecnologie,
l'Energia e l'Ambiente**

M Zucchelli (Vice-Chairman) *Italy*

Nationaal Fonds

voor Wetenschappelijk Onderzoek

H Decleir *Belgium*

**Fonds National de la Recherche
Scientifique**

R Souchez *Belgium*

**Statens Naturvidenskabelige
Forskningsråd / Det Kongelige
Danske Videnskabernes Selskab**

C Hammer *Denmark*

Suomen Akatemia / Finlands Akademi

P Mätkki *Finland*

**Institut Français pour la Recherche
et la Technologie Polaires**

R Gendrin *France*

Alfred Wegener Institute

M Tilzer *Germany*

Rannsóknarráð Islands

H Björnsson *Iceland*

Consiglio Nazionale delle Ricerche

R Azzolini *Italy*

**Nederlandse organisatie
voor wetenschappelijk onderzoek /
Koninklijke Nederlandse Akademie
van Wetenschappen**

R Schorno *The Netherlands*

Norsk Polarinstitutt

O Orheim *Norway*

Norges Forskningsråd

A Schytte Blix *Norway*

Polska Akademia Nauk

S Rakusa-Suszczewski *Poland*

**Consejo Superior de Investigaciones
Cientificas**

J R Wericad *Spain*

Kungliga Vetenskapsakademi

D Hedberg *Sweden*

Polarforskningssekretariatet

O Melander *Sweden*

**Schweizerischer Nationalfonds
zur Förderung der wissenschaftlichen
Forschung**

B Stauffer *Switzerland*

Natural Environment Research Council

D J Drewry *United Kingdom*

ESF Scientific Secretary: C Williams

ESF Contact: J Swift

Tel: (33) 88 76 71 41

Email: mps@esf.org

ESF associated committee membership

Committee on Radio Astronomy Frequencies (CRAF)

R J Cohen (Chairman) *United Kingdom*
H C Kahlmann (Chairman to Sept 95)
The Netherlands
T A Th Spoelstra (Secretary)
The Netherlands

R Bachiller *Spain*
A O Benz *Switzerland*
G F Block *France*
P Cugnon *Belgium*
B Darchy *France*
B A Doubinski *Russia*
S Gorgolewski *Poland*

A J Kus *Poland*
D Morris *France*
M E Özel *Turkey*
J E B Ponsonby *United Kingdom*
W Reich *Germany*
K Ruf *Germany*
A A Sanches de Magalhães *Portugal*
A Tlamicha *Czech Republic*
G Tomassetti *Italy*
A P van Eyken *Sweden*
A Winnberg *Sweden*

ESF Scientific Secretary: **H U Karow**
 ESF Contact: **M Clifford**
 Tel: (33) 88 76 71 07
 Email: pesc@esf.org

European Committee on Ocean and Polar Sciences (ECOPS)

A joint Committee of ESF
and the Commission
of the European Communities

G Hempel (Chairman) *Germany*
B Battaglia *Italy*
J Boissonnas *CEC*
D J Drewry *United Kingdom*
C Hammer *Denmark*

O M Johannessen *Norway*
X Le Pichon *France*
C Lorius *France*
W de Ruijter *The Netherlands*
J-O Strömberg *Sweden*
J D Woods *United Kingdom*
 ESF Scientific Secretary: **M Fratta**
 ESF Contact: **P Pirra**
 Tel: (33) 88 76 71 29
 Email: lesc@esf.org

European Space Science Committee (ESSC)

F Becker (Chairman) *France*
E Blamont (to Dec 95) *France*
M Candidi *Italy*
A M Cruise *United Kingdom*
K Dose *Germany*
J J Favier *France*
A Giménez *Spain*
R J Gurney *United Kingdom*
G Haerendel *Germany*
K F Hasselmann (to Dec 95) *Germany*
N Kiehne *Germany*
J-C Legros *Belgium*
D Linnarsson *Sweden*
N Mandolesi *Italy*
G Mégie *France*
D A M Mesland (to Dec 95) *The Netherlands*
A Mugnai *Italy*
W Riedler (to Dec 95) *Austria*
R Rummel *Germany*
H W Schnopper *Denmark*
G A Tammann (to Dec 95) *Switzerland*
F W Taylor *United Kingdom*
G Védrenne *France*

*The 5 departing members
are being replaced.*

ESF Scientific Secretary: **M Fratta**
 ESF Contact: **C Werner**
 Tel: (33) 88 76 71 28
 Email: cwerner@esf.org
 Scientific Assistant to the Chairman:
J-C Worms

The ESSC meetings are also attended
by representatives from the European
Space Agency, the European
Commission, the Space Research
Institute of the Russian Academy
of Sciences, the Space Studies Board
of the US National Academy
of Sciences, and COSPAR.

Nuclear Physics European Collaboration Committee (NuPECC)

S Gales (Chairman) *France*
P Kienle (Chairman to Dec 95) *Germany*
G E Körner *Germany*
J Äystö *Finland*
W Breunlich *Austria*
H Doubre *France*
A Fonseca *Portugal*
C Gaarde *Denmark*
P Guichon *France*
B Jonson *Sweden*
P Kienle *Germany*
R Malfliet *The Netherlands*
E Migneco *Italy*
G C Morrison *United Kingdom*
E Moya de Guerra *Spain*
E Osnes *Norway*
G Ricco *Italy*
B Schoch *Germany*
D Schwalm *Germany*
A Shotton *United Kingdom*
I Sick *Switzerland*
J Vervier *Belgium*
P de Witt Huberts *The Netherlands*

ESF Scientific Secretary: **H U Karow**
 ESF Contact: **M Clifford**
 Tel: (33) 88 76 71 07
 Email: pesc@esf.org

ESF member organisations

In November, the ESF General Assembly approved the applications for membership of the Hungarian Scientific Research Fund (OTKA), the Slovenian Science Foundation and the Slovenian Academy of Sciences. This brings the number of ESF Member Organisations to 59 in 21 countries.

Austria

Fonds zur Förderung der wissenschaftlichen Forschung in Österreich

Austrian Science Research Fund
Weyringergasse 35 • A-1040 Wien

Österreichische Akademie der Wissenschaften

Austrian Academy of Sciences
Dr. Ignaz-Seipel Platz 2 • A-1010 Wien

Belgium

**Fonds National de la Recherche Scientifique (FNRS)/
Nationaal Fonds voor Wetenschappelijk Onderzoek (NFWO)**

National Fund for Scientific Research
5, rue d'Egmont • B-1000 Bruxelles

Denmark

Det Kongelige Danske Videnskabernes Selskab

Royal Danish Academy of Sciences and Letters
H.C. Andersens Boulevard 35 •
DK-1553 København V

Statens Humanistiske Forskningsråd (SHF)

Humanities Research Council

Statens Jordbrugs-og Veterinærvidenskabelige Forskningsråd (SJVF)

Agricultural and Veterinary Science Research Council

Statens Sundhedsvidenskabelige Forskningsråd (SSVF)

Medical Research Council

Statens Naturvidenskabelige Forskningsråd (SNF)

Natural Science Research Council

Statens Samfundsvidenskabelige Forskningsråd (SSF)

Social Sciences Research Council

Statens Teknisk-Videnskabelige Forskningsråd (STVF)

Technical Research Council

The administrations of the six research councils are assumed by:

Forskningsrådene

Bredgade 43 • DK-1260 København K

Finland

Suomen Akatemia/Finlands Akademi

Academy of Finland
Hämeentie 68 B • PO Box 57
SF-00550 Helsinki

**Suomen Tiedeakatemian Valtuuskunta/
Delegationen för Vetenskapsakademierna i Finland**

Delegation of the Finnish Academies of Science and Letters
Mariankatu 5 • SF-00170 Helsinki

France

Centre National de la Recherche Scientifique (CNRS)

National Centre for Scientific Research
3 rue Michel-Ange • F-75794 Paris Cedex 16

**Commissariat à l'Energie Atomique (CEA)
Direction des Sciences de la Matière**

Institute for Basic Research of the Atomic Energy Commission

Centre d'Etudes Nucléaires de Saclay
Orme de Merisiers

F-91191 Gif-sur-Yvette Cedex

Institut Français de Recherche pour l'Exploitation de la Mer (IFREMER)

French Sea Research Institute

Technopolis 40

155, rue Jean-Jacques Rousseau

F-92138 Issy-les-Moulineaux Cedex

Institut National de la Santé et de la Recherche Médicale (INSERM)

National Institute for Health and Medical Research

101, rue de Tolbiac • F-75654 Paris Cedex 13

Germany

Hermann von Helmholtz-Gemeinschaft Deutscher Forschungszentren (HGF)

Association of National Research Centres
Postfach 20 14 48 / Ahrstrasse 45
D-53175 Bonn

Deutsche Forschungsgemeinschaft (DFG)

German Research Society

Kennedyallee 40 • D-53175 Bonn

Konferenz der deutschen Akademien der Wissenschaften

Conference of Academies of Arts and Sciences
Geschwister-Scholl-Strasse 2 • D-55131 Mainz

Max-Planck-Gesellschaft (MPG)

Max Planck Society

Hofgartenstrasse 2 • Postfach 101062
D-80539 München

Greece

National Hellenic Research Foundation (NHRF)

48 Vassileos Constantinou Avenue
GR-116 35 Athens

Hungary

Magyar Tudományos Akadémia

Hungarian Academy of Sciences

Roosevelt tér. 9 • H-1051 Budapest

Országos Tudományos Kutatási Alap (OTKA)

Hungarian Scientific Research Fund
Konyves Kalman Krt. 48-52 • H-1087 Budapest

Iceland

Rannsóknarráð Islands

The Research Council of Iceland

Laugavegi 13 • IS-101 Reykjavík

Ireland

FORBAIRT
Glasnevin • IRL-Dublin 9

Health Research Board
73 Lower Baggot Street • IRL-Dublin 2

Royal Irish Academy
19 Dawson Street • IRL-Dublin 2

Italy

Consiglio Nazionale delle Ricerche (CNR)
National Research Council
Piazzale Aldo Moro 7 • I-00100 Roma

**Ente per le Nuove Tecnologie,
l'Energia e l'Ambiente (ENEA)**
*Italian Agency for new Technologies, Energy
and the Environment (ENEA)*
Lungotevere Thaon de Revel 76 • I-00196 Roma

The Netherlands

**Koninklijke Nederlandse Akademie
van Wetenschappen**
*Royal Netherlands Academy of Arts
and Sciences*
Het Trippenhuis • Kloveniersburgwal 27
Postbus 19121 • NL-1000 GC Amsterdam

**Nederlandse Organisatie
voor Wetenschappelijk Onderzoek (NWO)**
*Netherlands Organisation for Scientific
Research*
Laan van Nieuw Oost Indië 131
Postbus 93138 • NL-2509 AC Den Haag

Norway

Det Norske Videnskaps-akademi
Norwegian Academy of Science and Letters
Drammensveien 78 • N-Oslo 2

Norges Forskningsråd
The Research Council of Norway
Stensberggata 26 • P.O. Box 2700
St Hanshaugen • N-0131 Oslo

Poland

Polska Akademia Nauk
Polish Academy of Sciences
Palac Kultury i Nauki • PL-00-901 Warsaw

Portugal

Academia das Ciências de Lisboa
Lisbon Academy of Sciences
Rua da Academia das Ciências, 19
P-1200 Lisboa

**Junta Nacional de Investigaçao Científica
e Tecnológica (JNICT)**
*Council for Scientific and Technological
Research*
Avenida Dom Carlos I, 126 • P-1200 Lisboa

Slovenia

**Slovenska Akademija Znanosti
in Umetnosti (SAZU)**
Slovenian Academy of Sciences and Arts
Novi trg. 3 • SLO-61000 Ljubljana

Slovenska Znanstvena Fundacija (SZF)
Slovenian Science Foundation
Stefanova 15 • SLO-61000 Ljubljana

Spain

**Consejo Superior de Investigaciones
Científicas (CSIC)**
Council for Scientific Research
Serrano 117 • E-28006 Madrid

**Secretaría General del Plan Nacional
de Investigación
Científica y Desarrollo Tecnológico**
*General Secretariat of the National Plan
for Scientific Research and Technological
Development*
Rosario Pino, 14-16 • E-28020 Madrid

Sweden

Forskningsrådsnämnden
*Council for Planning and Coordination
of Research*
Regeringsgatan 56
Box 7101 • S-103 87 Stockholm

**Humanistisk-Samhällsvetenskapliga
Forskningsrådet (HSFR)**
*Humanities and Social Sciences Research
Council*
Regeringsgatan 56
Box 7120 • S-103 87 Stockholm

Kungliga Vetenskapsakademi
The Royal Academy of Sciences
Box 50005 • S-104 05 Stockholm

**Kungliga Vitterhets-,
Historie- och Antikvitetsakademi**
*Royal Academy of Letters, History
and Antiquities*
Box 5622 • Villagatan 3 • S-114 86 Stockholm

Medicinska Forskningsrådet (MFR)
Medical Research Council
Box 7151 • Regeringsgatan 56
S-103 88 Stockholm

Naturvetenskapliga Forskningsrådet (NFR)
Natural Science Research Council
Box 7142 • Regeringsgatan 56
S-103 87 Stockholm

Skogs- och Jordbrukets Forskningsråd
*Swedish Council for Forestry
and Agricultural Research*
Odengatan 61 • Box 6488
S-113 82 Stockholm

Socialvetenskapliga Forskningsrådet
Swedish Council for Social Research
Tullgränd 4 • Box 2220 • S-103 15 Stockholm

Switzerland

**Schweizerischer Nationalfonds
zur Förderung der wissenschaftlichen
Forschung (NF)**
Swiss National Science Foundation
Wildhainweg 20
Postfach 2338 • CH-3001 Bern

**Konferenz der schweizerischen
wissenschaftlichen Akademien**
Conference of the Swiss Scientific Academies
Hirschengraben 11
Postfach 2535 • CH-3001 Bern

Turkey

**The Scientific and Technical Research
Council of Turkey (TÜBİTAK)**
Atatürk Bulvarı 221 • Kavaklıdere
TR-06100 Ankara

United Kingdom

**Biotechnology and Biological Sciences
Research Council (BBSRC)**
Central Office
Polaris House • North Star Avenue
GB-Swindon SN2 1UH

The British Academy
20-21 Cornwall Terrace
GB-London NW1 4QP

**Economic and Social Research Council
(ESRC)**
Polaris House
North Star Avenue • GB-Swindon SN2 1UJ

**Engineering and Physical Sciences
Research Council (EPSRC)**
Polaris House
North Star Avenue • GB-Swindon SN2 1ET

Medical Research Council (MRC)
20 Park Crescent • GB-London W1N 4AL

**Natural Environment Research Council
(NERC)**
Polaris House
North Star Avenue • GB-Swindon SN2 1EU

**Particle Physics and Astronomy
Research Council (PPARC)**
Polaris House
North Star Avenue • GB-Swindon SN2 1SZ

The Royal Society
6 Carlton House Terrace
GB-London SW1Y 5AG

Finance and accounts

In order to provide the latest available information on ESF Finances, the 1995 Accounts, which are being audited during 1996 are, with the Auditor's approval, published in this Report.

When approved by the Auditor, the 1995 accounts will be presented to and discussed by the Finance Committee (see page 66) at its April meeting, the Executive Council at its May meeting and the Assembly in November 1996.

Any modification requested by the Auditor or by the above mentioned bodies will be clearly identified in next year's Report.

The running of the ESF and its activities is funded by contributions from ESF Member Organisations.

The GENERAL BUDGET is used to finance the running of the ESF Secretariat (staff, administrative costs, statutory meetings, equipment) and the general scientific activity (meetings of the Standing Committees and of the working groups, cost of various workshops - especially those needed in the preparation of ESF Scientific Programmes; publications).

Table 1 presents the Inflow and Use of Funds in 1995. The Balance Sheet on 31 December 1995 and 1994 is given in Table 2.

In November 1995, the Assembly approved the 1996 General Budget, amounting to 29 766 kFF. It is itemised in Table 3.

The NETWORK ACCOUNT is used for the co-ordination of Network operations and for the running of Phase 1 Networks.

Table 4 presents the Inflow and Use of Funds in 1994. The Balance Sheet on 31 December 1995 and 1994 is presented in Table 5.

For 1996, the Assembly approved a budget of 5 580 kFF, including a target unspent balance of 100 kFF, thus providing 5 480 kFF for the running of Network Operations, as itemised in Table 6.

The sum of the GENERAL BUDGET and the NETWORK ACCOUNT constitutes the budget for the ESF BASIC ACTIVITIES which is shared between all ESF

Member Organisations according to a scale of contributions set out according to the statute (Table 7).

In addition to the activities funded from the Basic Activities' Budget, other activities are funded *à la carte* only by those Member Organisations which are interested in participating. These activities are named: Scientific Programmes (Additional Activities and Associated Programmes) or Phase 2 Networks. The ESF also runs some 'special budgets' (funds received from various non-ESF Organisations, 'workshop funds' established by Member Organisations and run by the ESF, etc). Amongst these special budgets are the accounts for the Programme of European Research Conferences (EURESCO) and for the European Marine and Polar Science Boards.

In order to provide an overview of all the funds managed by the ESF, Consolidated Accounts are presented in Table 8, and the Consolidated Balance Sheet on 31 December 1995 in Table 9.

Table 1: 1995 General Budget (in FF)

Use of Funds		Inflow of Funds	
1. Actual expenditure*	28 082 405.99	1. Brought forward from 1994	6 438 501.76
Salaries and Charges	17 386 661.13	1.1• 1994 excess of Inflow of Funds over Use of Funds	3 238 501.76
Running expenses	2 921 990.00	1.2• 1994 interest committed to reduce the 1995 call	3 200 000.00
Scientific and statutory meetings	5 775 276.16	2. 1995 Contributions from Member Organisations	24 139 000.00
Publications and publicity	1 411 910.29	2.1• for the General Budget	22 939 000.00
Equipment and maintenance work	450 000.00	2.2• for the implementation of the Reappraisal	600 000.00
Miscellaneous	136 568.41	2.3• for the provision for EURESCO	600 000.00
2. Additional expenditure on works	1 146 510.87	3. Transfers for management costs	2 250 000.00
3. Carry forward to 1996 (committed to reduce the 1996 Call)	3 400 000.00	4. Additional management costs	425 501.12
4. Provision for the 1996 payment to the City of Strasbourg for works	1 000 000.00	5. 1995 Bank Interest	2 114 177.25
5. Transfer to the Reserve Fund	52 679.01	5.1• used for the 1995 budget	400 000.00
6. Transfer to the Reserve Fund for EURESCO	600 000.00	5.2• used to reduce the 1996 call	1 714 177.25
7. Provision for doubtful debts	225 264.00	6. Use of part of the provision for works	646 510.87
Total Use of Funds	34 506 859.87	7. Miscellaneous income	37 018.72
Excess of Inflow of Funds over Use of Funds	1 543 849.85	Total Inflow of Funds	36 050 709.72
	36 050 709.72		

* Including expenditure (other than staff) incurred for EURESCO

Table 2: General Budget: Balance sheet on 31 December 1995 and 1994 (in FF)

Assets		1995	1994	Liabilities		1995	1994
Fixed Assets		1 279 550.10	1 256 965.50	Capital Endowment		1 279 550.10	1 256 965.50
(furniture and office equipment)				Reserve Fund		3 748 510.13	3 695 831.12
Current Assets				Reserve Fund / EURESCO		600 000.00	—
• Contributions expected from Member Organisations	625 389.95	478 150.87		Provision for Works		1 189 182.78	835 693.65
• Accounts receivable	—	150 478.58		Provision for doubtful debts		225 264.00	—
• Clearing account	—	68 474.72		Current Liabilities			
• Paid in advance	135 847.76	113 454.40		• Accounts payable	2 940 736.73	2 735 774.52	
• Securities	26 387 194.85	29 887 663.86		• Clearing account	3 121 709.64	156 925.52	
• Cash in hand	673.48	7 643.51		• Commitment for SCSS Grants	100 000.00	—	
				• Collected or received in advance	3 400 000.00	4 706 253.13	
				• Cash owed to the bank*	9 796 412.08	15 093 177.42	
				• Interest received after respectively 18/10/95 and 15/10/94	483 440.83	243 708.82	
				Excess of Inflow of Funds over Use of Funds		1 543 849.85	3 238 501.76
	28 428 656.14	31 962 831.44			28 428 656.14	31 962 831.44	

* The cash owed to the bank implies no interest payments to the bank, because the bank takes into account the positive overall balance for all ESF accounts.

Table 3: General Budget for 1995 and 1996 (in kFF)

	1995	1996
Salaries and charges	18 008	18 077
Running expenses	2 915	3 030
Scientific and statutory meetings	5 910	6 370
Publications and publicity	1 300	1 450
Equipment and maintenance work	450	650
Others (incl. Audit costs)	206	189
	28 789	29 766

Table 4: Network Account: Inflow and Use of Funds 1995 (in FF)

Use of Funds		Inflow of Funds	
Expenditure for 27 Phase 1 Networks	4 034 133.56	1995 Contributions from Member Organisations	4 740 000.00
Exploratory workshops	140 816.43	Carried over from previous year	1 030 706.37
Management and administration	1 053 992.41	1995 bank interest	98 582.39
<ul style="list-style-type: none"> • 1995 ESF Management charges • Publications, bank charges and miscellaneous • Staff travel and Network Committee meetings 	770 000.00 66 141.19 217 851.22		
Provision for doubtful debts	44 160.00		
Total Use of Funds	5 273 102.40		
Excess of Inflow over Use of Funds	596 186.36		
	5 869 288.76	Total Inflow of Funds	5 869 288.76

Table 5: Network Account: Balance Sheet on 31 December 1995 and 1994 (in FF)

Assets			Liabilities		
	1995	1994		1995	1994
Current Assets			Current Liabilities		
• Contributions expected from Member Organisations	117 018.43	82 914.71	• Accounts payable	263 510.22	192 476.14
• Contributions received on General Budget	35 206.57	—	• Provision for doubtful debts	44 160.00	—
• Accounts receivable	73 300.20	—	• Received in advance	—	118 031.79
• Paid in advance	71 864.97	121 074.44	• Clearing account	—	6 208.40
• Securities	566 450.96	1 109 853.31			
• Cash in hand	40 015.45	33 580.24	Excess of Inflow over Use of Funds	596 186.36	1 030 706.37
	903 856.58	1 347 422.70		903 856.58	1 347 422.70

Table 6: Budgeted Use of Funds of Network Account in 1995 and 1996 (in kFF)

	1995	1996
Phase 1 Networks	4 250	4 250
Exploratory workshops, travels and meetings	570	480
Management costs	770	750
Target unspent balance	200	100
	5 790	5 580

Table 7: Scale of Contributions

(Based on net national income at market prices)

	1992	1993/94	1995	1996
	%	%	%	%
Austria	2.24	2.27	2.29	2.33
Belgium	2.83	2.87	2.69	2.75
Denmark	1.95	1.98	1.81	1.78
Finland	1.51	1.53	1.51	1.25
France	16.94	17.17	16.63	16.37
Germany	21.37	21.66	22.91	23.54
Greece	0.95	0.96	0.98	0.99
Hungary	0.50	0.51	0.46	0.46
Iceland	0.10	0.10	0.08	0.08
Ireland	0.51	0.52	0.55	0.56
Italy	14.74	14.94	15.03	14.70
The Netherlands	4.22	4.28	4.10	4.10
Norway	1.56	1.58	1.39	1.34
Poland	1.48	1.50	1.14	1.17
Portugal	0.61	0.62	0.65	0.67
Slovenia	—	—	—	0.21
Spain	5.74	5.82	6.16	6.34
Sweden	3.11	3.15	3.16	2.84
Switzerland	3.54	3.59	3.43	3.35
Turkey	1.14	1.16	1.22	1.25
United Kingdom	13.60	13.79	13.81	13.92
Yugoslavia	1.36	—	—	—
	100.00	100.00	100.00	100.00

- Figures for 1992 and 1993/1994 are based on net national incomes for the years 1986, 1987 and 1988.
- Figures for 1995 are based on net national incomes for the years 1990, 1991 and 1992.
- Before 1995 income figures used for Germany were for the Federal Republic. Since 1995 they are for the reunified Germany.
- Figures for 1996 are based on net national incomes for the years 1991, 1992 and 1993.

Table 8: Consolidated Inflow and Use of Funds (In FF)

	Use of Funds				Total
	Basic Activities	Scientific Programmes, Phase 2 Netw. & Assoc. Committees	Special Budgets	Excess of Inflow over Use of Funds	
General Budget	34 506 859.87			1 543 849.85	36 050 709.72
Network Account	5 273 102.40			596 186.36	5 869 288.76
AA Airborne Polar Experiment		606 128.75		108 871.25	715 000.00
AA Artificial Biosensing Interfaces		937 934.86		164 318.26	1 102 253.12
AA Asian Studies Workshops		711 950.28		206 864.43	918 814.71
AA Beliefs in Government		205 902.31		625 726.23	831 628.54
AA Biophysics of Photosynthesis		1 127 295.42		399 525.24	1 526 820.66
AA Chemistry of Metals in Biological Systems		434 767.35		77 873.90	512 641.25
AA Concepts and Symbols in 18th Century Europe		560 466.06		885 526.51	1 445 992.57
AA Control of Complex Systems		211 558.77		401 959.23	613 518.00
AA Database of the Quaternary Mammals of Europe		317 592.09		67 144.46	384 736.55
AA Dynamics of Gas-Surface Interactions		587 997.65		96 605.17	684 602.82
AA Environmental Damage and its Assessment		41 409.69		—	41 409.69
AA European Ice Sheet Modelling Initiative		1 261 158.40		534 860.62	1 796 019.02
AA European Management & Organisations in Transition		945 841.33		474 975.64	1 420 816.97
AA European Palaeoclimate		813 864.50		553 623.76	1 367 488.26
AA European Volcanology Project		196 077.17		478 676.78	674 753.95
AA Europrobe		1 330 359.88		305 370.55	1 635 730.43
AA The Evolution of Chemistry in Europe		376 556.69		656 244.27	1 032 800.96
AA Geographic Information Systems		1 112 022.80		1 291 886.67	2 403 909.47
AA Language Typology		489 930.26		703 190.31	1 193 120.57
AA Learning in Humans and Machines		680 946.32		658 834.83	1 339 781.15
AA Kinetic Processes in Minerals and Ceramics		195 395.23		260 697.17	456 092.40
AA Mathematical Treatment of Free Boundary Problems		1 044 793.28		312 366.00	1 357 159.28
AA Study Centres in Non-Linear Systems		36.98		—	36.98
AA Origins of the Modern State		128 480.79		21 299.48	149 780.27
AA Population Biology		919 123.67		45 237.11	964 360.78
AA Process Integration in Biochemical Engineering		560 449.50		320 859.19	881 308.69
AA Regional and Urban Restructuring in Europe		111 148.71		353 721.35	464 870.06
AA Relativistic Effects in Heavy Elements Chem. & Phys.		752 355.56		291 480.83	1 043 836.39
AA Study of the European Arctic Shelf		—		207 669.58	207 669.58
AA Tackling Environmental Resource Management		361 884.70		2 268 160.32	2 630 045.02
AA Transformation of the Roman World		1 041 996.83		691 438.35	1 733 435.18
AA Tropical Canopy Research		231 927.10		387 408.75	619 335.85
AA Vapour-phase Nano-particle Materials		162 218.97		525 081.03	687 300.00
AP Developmental Biology		1 539 165.33		458 046.09	1 997 211.42
AP European Neuroscience Programme (ENP)		4 974 239.95		19 238.01	4 993 477.96
AP European Consortium for Ocean Drilling (ECOD)		800 208.33		152 229.94	952 438.27
AP European Glaciological Programme / Greenland Icecore project		554 153.58		243 670.75	797 824.33
AP Programme of Fellowships in Toxicology (PFT)		2 348 282.64		81 858.82	2 430 141.46
AP Polar North Atlantic Margins (PONAM)		159 468.56		79 588.46	239 057.02
AP Molecular Neurobiology of Mental Illness		2 345 649.60		161 439.40	2 507 089.00
AC NuPECC		642 348.59		305 457.32	947 805.91
AC Space Science Committee		659 207.64		490 720.75	1 149 928.39
N2 Crystallography of Biological Macromolecules		200 272.67		—	200 272.67
N2 Financial Markets		320 249.39		—	320 249.39
N2 History of European Expansion		265 466.54		—	265 466.54
N2 Surface Crystallography		283 491.00		—	283 491.00
General Account for Scientific Programmes		1 626 546.75		124 951.71	1 751 498.46
SB Asian Studies Fellowships			24 790.52	3 041 283.37	3 066 073.89
SB EURESCO			15 710 258.79	382 871.97	16 093 130.76
SB European Marine and Polar Science			1 562 296.53	233 259.85	1 795 556.38
SB CEC Contracts			155 501.12	—	155 501.12
SB British Academy Special Fund			—	23 816.84	23 816.84
SB CNR Special Fund			9 429.89	59 634.86	69 064.75
SB ESRC Special Fund			—	102 860.54	102 860.54
SB NWO/Russians			30 511.43	32 939.17	63 450.60
Earlier Contributions written-off					
Total	39 779 962.27	35 178 322.47	17 492 788.28	22 511 401.33	114 962 474.75

AA = Additional Activity

AC = Associated Committee

SB = Special Budget

AP = Associated Programme

N2 = Phase 2 Network

Inflow of Funds

	Basic Activities	Scientific Programmes, Phase 2 Netw. & Assoc. Committees	Special Budgets	Carried over from 1994	Total
General Budget	29 612 207.96			6 438 501.76	36 050 709.72
Network Account	4 838 582.39			1 030 706.37	5 869 288.76
AA Airborne Polar Experiment		715 000.00		—	715 000.00
AA Artificial Biosensing Interfaces		735 000.00		367 253.12	1 102 253.12
AA Asian Studies Workshops		918 814.71		—	918 814.71
AA Beliefs in Government		—		831 628.54	831 628.54
AA Biophysics of Photosynthesis		984 000.00		542 820.66	1 526 820.66
AA Chemistry of Metals in Biological Systems		495 000.00		17 641.25	512 641.25
AA Concepts and Symbols in 18th Century Europe		620 000.00		825 992.57	1 445 992.57
AA Control of Complex Systems		613 518.00		—	613 518.00
AA Database of the Quaternary Mammals of Europe		300 000.00		84 736.55	384 736.55
AA Dynamics of Gas-Surface Interactions		554 000.00		130 602.82	684 602.82
AA Environmental Damage and its Assessment		—		41 409.69	41 409.69
AA European Ice Sheet Modelling Initiative		936 000.00		860 019.02	1 796 019.02
AA European Management & Organisations in Transition		586 030.00		834 786.97	1 420 816.97
AA European Palaeoclimate		945 000.00		422 488.26	1 367 488.26
AA European Volcanology Project		410 000.00		394 753.95	804 753.95
AA Europrobe		1 365 000.00		270 730.43	1 635 730.43
AA The Evolution of Chemistry in Europe		472 500.00		560 300.96	1 032 800.96
AA Geographic Information Systems		1 565 550.00		838 359.47	2 403 909.47
AA Language Typology		—		1 193 120.57	1 193 120.57
AA Learning in Humans and Machines		887 795.00		451 986.15	1 339 781.15
AA Kinetic Processes in Minerals and Ceramics		424 500.00		31 592.40	456 092.40
AA Mathematical Treatment of Free Boundary Problems		1 069 000.00		288 159.28	1 357 159.28
AA Study Centres in Non-Linear Systems		—		36.98	36.98
AA Origins of the Modern State		—		149 780.27	149 780.27
AA Population Biology		816 980.12		147 380.66	964 360.78
AA Process Integration in Biochemical Engineering		—		881 308.69	881 308.69
AA Regional and Urban Restructuring in Europe		31 135.00		433 735.06	464 870.06
AA Relativistic Effects in Heavy Elements Chem. & Phys.		700 000.00		343 836.39	1 043 836.39
AA Study of the European Arctic Shelf		—		207 669.58	207 669.58
AA Tackling Environmental Resource Management		500 000.00		2 130 045.02	2 630 045.02
AA Transformation of the Roman World		1 092 000.00		721 435.18	1 813 435.18
AA Tropical Canopy Research		530 000.00		179 335.85	709 335.85
AA Vapour-phase Nano-particle Materials		687 300.00		—	687 300.00
AP Developmental Biology		1 406 000.00		591 211.42	1 997 211.42
AP European Neuroscience Programme (ENP)		3 172 230.21		1 821 247.75	4 993 477.96
AP European Consortium for Ocean Drilling (ECOD)		818 173.66		204 264.61	1 022 438.27
AP European Glaciological Programme / Greenland Icecore project		—		797 824.33	797 824.33
AP Programme of Fellowships in Toxicology (PFT)		2 388 000.00		87 141.46	2 475 141.46
AP Polar North Atlantic Margins (PONAM)		—		239 057.02	239 057.02
AP Molecular Neurobiology of Mental Illness		1 781 000.00		726 089.00	2 507 089.00
IC NuPECC		679 710.64		268 095.27	947 805.91
IC Space Science Committee		460 000.00		759 928.39	1 219 928.39
I2 Crystallography of Biological Macromolecules		—		200 272.67	200 272.67
I2 Financial Markets		—		320 249.39	320 249.39
I2 History of European Expansion		—		265 466.54	265 466.54
I2 Surface Crystallography		—		283 491.00	283 491.00
General Account for Scientific Programmes		586 708.24		1 164 790.22	1 751 498.46
B Asian Studies Fellowships				3 066 073.89	3 066 073.89
B EURESCO			16 093 130.76	—	16 093 130.76
B European Marine and Polar Science			1 642 000.62	153 555.76	1 795 556.38
B CEC Contracts			24 149.22	131 351.90	155 501.12
B British Academy Special Fund			—	23 816.84	23 816.84
B CNR Special Fund			—	69 064.75	69 064.75
B ESRC Special Fund			—	102 860.54	102 860.54
B NWO/Russians			—	63 450.60	63 450.60
Earlier Contributions written-off				- 485 000.00	- 485 000.00
Total	34 450 790.35	30 245 945.58	17 759 280.60	32 506 457.82	114 962 474.35

When, on a same line, figures in the last column (Total inflow of funds) are higher than figures in the first column (Total use of funds) this denotes that earlier contributions have been written off (see last line)

Table 9: Consolidated Balance Sheet on 31.12.1995 (In FF)

Assets	Basic Activities	Scientific Programmes, Phase 2 Netw. & Assoc. Committees	Social Budgets	Total
Furniture and office equipment	1 279 550.10			1 279 550.10
Contributions expected from Member Organisations	742 408.38	1 436 413.67	100 000.00	2 278 822.05
Contributions received on General Budget	35 206.57	2 968 520.00	100 000.00	3 103 726.57
Payments expected from the European Union			6 275 082.92	6 275 082.92
Accounts receivable	73 300.20	47 264.42	74 688.75	195 253.37
Paid in advance	207 712.73	357 210.48	52 130.14	617 053.35
Clearing Account		2 000.00	8 117.39	10 117.39
Securities	26 953 645.81	1 342 787.27	3 063 448.96	31 359 882.04
Cash in Bank	40 015.45	17 641 183.68	226 421.77	17 907 620.90
Cash in hand	673.48			673.48
Total	29 332 512.72	23 795 379.52	9 899 889.93	63 027 782.17

Liabilities	Basic Activities	Scientific Programmes, Phase 2 Netw. & Assoc. Committees	Special Budgets	Total
Capital Endowment	1 279 550.10			1 279 550.10
erve Fund	3 748 510.13			3 748 510.13
erve Fund EURESCO	600 000.00			600 000.00
ision for Works	1 189 182.78			1 189 182.78
ision doubtful debt	269 424.00			269 424.00
ounts payable	3 304 246.95	3 633 928.98	208 157.84	7 146 333.77
ring Account	3 121 709.64	64 000.00		3 185 709.64
ected or received lvance	3 883 440.83	265 023.03	1 297 491.50	5 445 955.36
ision for commitments		3 337 728.99		3 337 728.99
owed to the bank	9 796 412.08		4 517 573.99	14 313 986.07
s of Inflow of Funds Use of Funds	2 140 036.21	16 494 698.52	3 876 666.60	22 511 401.33
	29 332 512.72	23 795 379.52	9 899 889.93	63 027 782.17



European Science Foundation

1, quai Lezay-Marnésia
67080 Strasbourg Cedex France
Tel: (+33) 88 76 71 00
Fax: (+33) 88 57 05 52
WWW Home Page: <http://www.esf.org>

ISBN 2-905148-85-6